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A COMPLETE

HANDBOOK OF TREATMENT,

ARRANGED AS AN

Alphabetical Index of Diseases

TO FACILITATE REFERENCE, AND

CONTAINING NEARLY ONE THOUSAND FORMULÆ,

BY

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PREFACE.

THERE is, perhaps, no more striking characteristic of the medical practitioner of to-day, and none better illustrating the pervading spirit of the age, than the universally observed tendency among medical men to shun, in medical literature, the unrealities of theoretical discussion, and to appropriate with avidity only facts which they can instantly transform into working force, and the gain from which is conspicuously apparent.

Now and then we meet with a writer who has in part, at least, appreciated this demand for the practical, the utilizable, and has accordingly made some effort to supply this imperative appetite with the proper food. We have, however, in the whole range of medical literature, no book which is a complete reflection of the *treatment* of every recognized disease, no book which has taken for granted that the practitioner knows what disease he has to cope with, and aimed chiefly to supply him, ready for instant use, with the armament he must rely on to win the victory—an armament which should embrace chiefly the best methods of treatment.

A book which is at once concise and comprehensive, which is arranged so that the practitioner, given a disease to treat, may have before him in a nutshell, the latest treatment recommended by the best authorities; and a book which is, above all else, *a book of* TREATMENT, we here offer to the profession. It is composed of the chapters on *Treatment* taken from the seventh (latest) edition of Dr. Aitken's Encyclopædic work on the Science and Practice of Medicine, which chapters have been revised and rearranged, so as to make them more available for reference. The reader will find that the work does not only embrace the experience of its distinguished author, but also that of every known authority.

A COMPLETE

HANDBOOK OF TREATMENT,

ARRANGED AS AN

ALPHABETICAL INDEX OF DISEASES.

Acne.—*Definition.*—Inflammation of the sebaceous glands and hair follicles, with retention of the gland secretion.

Treatment.—Local and general measures require to be combined. Diet, in the first instance, should be restricted. Wine, spirits, and coffee are to be refrained from. Milk is to be used as a drink, and as an article of diet, combined with light food, fresh vegetables, and succulent ripe fruits. Emollient applications, such as an emulsion of bitter almonds, a decoction of bran or quince seeds, and tepid milk, are useful. Dr. Anderson has found sulphur (3 i.), mixed with rectified spirit (3 i.), to be shaken before using it; or a mixture of hyd. corrosiv. sublim. (gr. ix.-xii.); hydrochl. ammoniæ(3 ss.)cochinillini (gr. i.); aqæ. rosœ (℥ vi.),particularly serviceable. Generally, if one fails, the other succeeds.

In that form of acne common to young women at the commencement of their menstrual period, Dr. Ringer recommends sulphur (3 i.), glycerine (ƒ 3 i.), water (ƒ ℥ x.), to be applied twice or thrice daily.

Whichever of these lotions is used, let it be applied by dipping a piece of flannel into the lotion, and rubbing *very firmly* over the eruption night and morning. Flowers of sulphur used dry to dust the parts with at bedtime is also of service. To promote resolution of the induration, iodide of sulphur, in the proportion of fifteen or twenty-four grains to an ounce of lard, is of great service in dispelling the tumors. Drastic purgation ought to be avoided. Simple baths at a temperature of 88° or 90° Fahr. are of service. Calomel ointment (3 i. of calomel to ℥ ii. of lard) has been found useful, care being taken against salivation. If there be much thickening of skin, Mr. Milton recommends the internal use

of liquor potassæ, although inferior to arsenic, which ought tc be used. In dysidrosis, the treatment is mainly by carron oil to the inflamed parts, with diuretics and tonics internally.

Addison's Disease.—*Definition.*—Disease of the suprarenal capsules, with discoloration of the skin; or, a morbid state which establishes itself with extreme insidiousness, whose characteristic features are anæmia, general langour and debility, and extreme prostration, expressed by loss of muscular power, weakness of pulse, remarkable feebleness of the heart's action, breathlessness upon slight exertion, dimness of sight, functional weakness and irritability of the stomach, and a peculiar uniform discoloration of the skin, which becomes of a brownish olive-green hue, like that of a mulatto, occurring in connection with a certain diseased condition of the suprarenal capsules. The progress of the disease is very slow, extending on an average over one year and a half, but may be prolonged over four or five. The tendency to death is by asthenia, the heart becoming utterly powerless, as if its natural stimulus—the blood—had ceased to act.

Treatment.—If the disease be recognized in its earliest stages, its progress may to some extent be delayed. The asthenia, the depression, the evidence of local irritation about the suprarenal capsules, and the pathology of the disease generally, point to the necessity for tonic treatment and nutritive diet, the avoidance of all causes of depression, and the benefit of rest in bed, and of such medicinal agents as may relieve the vomiting. Glycerine, in two drachm doses, combined with fifteen or twenty minims of the spirit of chloroform, and of the tincture of the sesquichloride of iron, have have been of service (E. H. Greenhow). This may be varied by the substitution of twenty to thirty minims of the syrup of phosphates of iron, quinine and strychnia, in place of the sesquichloride of iron. The greatest caution is necessary in using purgative remedies as fatal collapse is apt to follow cathartic medicine.

Ague.—*Definition.*—Febrile phenomena occurring in paroxysms, which observe a certain regular succession, characterized by unnatural coolness, unnatural heat, and unnatural cutaneous discharge, which prove a temporary crisis, ushering in a remission. These phenomena continue to be developed in an uninterrupted series or succession of paroxysms, more or less regular, which pass into each other by insensible steps, so long as the ague lasts.

Treatment.—It is useless to attempt the cure of intermittent fever if the sufferer is permitted to remain within the sphere of malarial influences. The old empirical treatment in the English fens was first an emetic, then a sharp purge, followed by quinine and arsenic. But an emetic must not be given for ague, without regard to the special circumstances of the case. Emetics are only of use when the tongue is very foul or the stomach overloaded; or when there is nausea and headache with epigastric oppression. An emetic will then give great relief, and hasten the stage of reaction. In the simple cases, when removed from the sphere of malarial influence, active purgatives are always beneficial in relieving the full and congested state of the abdomen generally; and they prepare the way for the action of quinine, especially combined with diureties, such as cream of tartar (Wood). There are also cases of intermittent fever complicated with hepatic and other engorgements, which continue to recur despite of all means, until a few doses of calomel, followed by purgatives, are administered; then the quinine, which before failed, will speedily cure the disease. The compound jalap powder, combined with calomel, is found very beneficial in such cases. If much urinary irritation exist a mixture of ʒ vi of bicarbonate of soda, dissolved in ℥ viiss. of water, to which ℥ ss. of Sp. Ætheris nitrosi is added, given in half-ounce doses every two or three hours, with or without tincture of opium, will relieve it. Certain morbid conditions both of liver and spleen, may produce and maintain the tendency to recurrences of ague. Ramazini relates the case of a patient harassed by an obstinate ague, and who was cured by mercurial frictions administered for syphilis. The influence of splenic disease in keeping up the morbid train of actions of the original fever, and in producing relapses, has been recorded by M. Piorry. In more than 500 cases of ague in which he observed the state of the spleen, he comes to the following conclusions, namely:—that the organ is invariably enlarged during the progress of the fever, and that by the use of quinine the spleen diminishes in size; that its reduction in size bears some relation to the quantity of quinine taken; that the effect it produces upon the fever is in proportion to the reduction of the spleen; that the disease is cured simultaneously with the subsidence of the splenic enlargement; and that the fever is apt to recur so long as the spleen exceeds its normal size. The treatment of the disease as to stages is to be managed as follows:—

During the cold stage the patient generally desires to be let alone, care being taken that he has abundance of bed-clothes. If the stage continues unusually long without signs of reaction the application of external warmth becomes necessary with warm drinks ; and even ammonia, ether, camphor, and other diffusible stimulants may be required if the vital powers are unequal to the development of reaction. During the hot stage, diluent drinks may be indulged in, if the patient desires them, with cooling diuretics ; but the danger consists in the approach of collapse when the sweating stage commences ; and when stimulants and support may be required. The first dose of quinine should, then, be given towards the close of the sweating stage. "I always assume," writes Professor Maclean, "that in first attacks the type of the disease will prove to be quotidian, and take my measures accordingly, making sure that the patient shall have thirty grains of quinine between the termination of one paroxysm and the hour when we may look for another ; and looking to the fact that we may look for the setting in of the cold stage, perhaps two hours earlier than on the first day, the last ter grain dose of quinine should be given so as to anticipate that time by at least an hour." It is to be administered, in solution, dissolved by a small quantity of dilute sulphuric *acid*, and the dose mixed with syrup of orange peel. It may also be administered in starch or beef-tea enemata, or by subcutaneous injection. The object and action of quinine are to break the system off "the habit of going through the phenomena of an 'ague fit.' It counteracts the influence of the malarial poison, and prevents the repetition of the attacks. A moderate degree of cinchonism must still be maintained for some days, to the extent of 'ringing in the ears,' by giving three or four grains of quinine in solution every three or four hours, and a day or two before the interval of a month the patient must be again brought under the influence of this remedy. Within this period (a lunar month) there is always a tendency to the repetition of the 'ague fit,' the habit of which must be thus broken ; otherwise it will be strengthened by every successive attack" (Maclean). Next to quinine in the cure of ague comes arsenic. From six to eight drops of Fowler's solution may be given during the interval of freedom from fever. It should be given in small doses, and not persevered in for more than eight or ten days ; and like quinine its use must be continued in diminished doses for some time after cessation of the

fever. The earliest signs of its physiological action must be looked for to determine to what extent it must be pushed—these being redness of the eyes, watering of the mouth, and a silvery state of the tongue. The dose should always be given after food. In malarial brow-ache (brow-ague) and malarial hemicrania it is more efficacious than quinine. Due attention must be paid to feeding during the intermission, especially by beef-tea and farinaceous food.

In all complications of ague, be they cerebral, pulmonic, hepatic, or gastric, quinine must still be the therapeutic agent to be relied upon. Antiphlogistic measures are not to be substituted in place of it on any account whatever. As to the malarious cachexia, removal from the malarious locality is the first essential condition to restoration of health; the next is a combination of nutritious diet, abundance of exercise, pure air and pure water; and clothing should be warm on first coming into cold latitudes. The prophylactic use of quinine must still be persevered in; and if appetite fail, a course of syrup of the phosphate of iron, quinine and strychnia in ten-minim doses, in a large quantity of water (a claret glassful), will be of service. In the experience amongst the invalided soldiers at the R. V. Hospital at Netley Dr. Maclean has found this medicine of much use. The chronic malaria cachexia is also much benefited by arsenic, especially when there is diarrhœa. In such cases two minims of Fowler's solution with five minims of laudanum should be given before meals. So also the use of coti bark may be of service in diarrhœa. In the treatment of the anæmic chlorosis of malaria arsenic is especially adapted to those cases in which iron does not agree; while the efficacy of iron is often also increased by its combination with arsenic.

Should the spleen continue of large size ointment of the bin-iodide of mercury is to be rubbed in over the gland. A portion about the size of a nutmeg is to be applied with a smooth spatula, the patient sitting before the heat of the fire, as long as he can bear the smarting which follows. The remedy has a not less beneficial influence on enlarged livers (Prof. W. C. Maclean).

Albuminuria—*See Bright's Disease.*

Alcoholism.—*Definition.*—A train of morbid phenomena produced by the slow and cumulative action of alcohol in the various forms in which it is used as a drink. Delirium is one of the most prominent features of the morbid state, which is otherwise characterized by hallucinations, dread, tremors of

the tendons and muscles of the hands and limbs, watchfulness, absence of sleep, great frequency of pulse. A thick, creamy fur loads the tongue, and a cool, humid, or perspiring surface prevails; while the patient gives forth a peculiar odor, of a saccharo-alcoholic description; more or less strong.

Treatment.—The indications are,—(1.) The elimination of the poison; (2.) the sustenance of the patient during this period. The two most fatal errors which can be committed in the treatment of delirium tremens are to bleed the patient or to give him opiates. The greatest number of cases of those treated by opiates are apt to terminate by convulsions and coma (Morehead, Peddie, Law, Cahill, Laycock). If it be true, also, that opium and alcoholic stimulants singly are to be deprecated in the treatment of delirium tremens, *a fortiori* in their combination there is a twofold danger, alike in tropical as in temperate regions it is a course of treatment attended with much hazard, and if systematically followed, is certain of leading to unfortunate results (see Moreheads's "Researches on Diseases in India;" also, "Notes on Treatment of Delirium Tremens," by W. Hanbury, 33rd Regiment, in *Madras Quarterly Journal*, July, 1863). The strength must be supported by diet of the most nutritious kind, in a fluid and mild form, such as yolk of eggs, soups, and the like. Food should be given in small quantities and often. Beef-tea, spiced soup, and egg-flip, are each to be commended at different periods of the day. If the patient continues to digest food, the danger is much diminished, which in the first instance is from exhaustion. Careful nursing is above all things necessary, so that protection from all sources of danger may be adequate and the food adapted to the state of the digestion, which is always feeble. The disease must be treated as one spontaneously curable; not by withholding remedies, but by using them in strict subordination to good nursing and carefully adjusted diet and regimen (Ware, Hood, Peddie, Laycock, W. T. Gairdner). Active specifics for delirium tremens appear to be founded on the idea that the disease is one nominally of high mortality. Hence the enormous doses of digitalis (Jones) and of Cayenne pepper (Kinnear and Lyons of Dublin); but before resorting to the use of such remedies as digitalis, it will at least be judicious practice to adopt such means as are calculated to restore the powers of nature —namely, nutrients and rest; while the stimulus of such a spice as Cayenne pepper, given in the soup, on the atonic

stomach, will have a favorable influence on absorption. Under the care of my friend, Dr. Lyons, of Dublin, numerous cases of delirium tremens have rapidly yielded to capsicum, in doses of xx. to xxx. grains, in the form of a bolus. I have given it in numerous cases and in all forms of chronic alcoholism. Its influence in soothing the patient and in securing quiet sleep has been certainly remarkable. By some reviewers this influence has been questioned ; but the evidence of its good effects are daily accumulating. Dr. Ringer, in an able article in the *Brit. Med. Journ.*, in 1871, advocates the use of capsicum, "given in doses of the tincture (five to ten drops) in a little syrup of orange peel. Or the powder may be formed into five-grain pills with extract of gentian—one to be taken every four hours till quietude is obtained ; or, twenty grains in a single dose may be taken before meals, or whenever depression or craving for alcohol arises." It induces sleep in the early stages of delirium tremens. It obviates the morning vomiting, removes the sinking at the pit of the stomach, the intense craving for stimulants, and promotes appetite and digestion. Dr. Wilks prescribes it with nitric acid and nux vomica. Dr. Lauder Brunton has given a great deal of attention to this subject, and, according to his experience, a combination of iron and nux vomica (say fifteen minims of the tincture of the perchloride and ten of tincture of nux vomica) is one of the most efficacious remedies for the tremors of chronic alcoholism. If the stomach be deranged,as it very frequently is, the indigestion should be treated previously to the administration of iron, by giving ten grains of subnitrate or carbonate of bismuth with ten of magnesia, suspended with gum tragacanth. If there be any tendency to sleeplessness, or if the tremors should not rapidly disappear under the use of the iron and nux vomica alone, thirty or forty grains of bromide of potassium should be given at night. The chalybeate mixture already mentioned, either alone or with the addition of five or ten minims of tincture of capsicum, tends to alleviate the craving for drink. Another mixture recommended for this purpose consists of sulphate of iron, magnesia, and oil of cloves ; a third consists of carbonate of ammonia in infusion of gentian, to be taken whenever the craving is felt. Should the craving come on at intervals of several weeks, with complete intermissions between, the case should be treated like one of epilepsy, by the administration of bromide of potassium.

Chloral is now a most important and valuable addition to our remedial agents in this disease. It produces sound and refreshing sleep, followed by relief to all the symptoms. It now seems to serve all the purposes intended by opium.

The late Dr. Jones, of Jersey, gave as much as half-ounce doses of the tincture of digitalis till three doses had been taken; and then, if excitement were not subdued, nor sleep induced, two fluid drachms were repeated every three or four hours (*Med. Times and Gazette*, Sept. 29, 1860). But Dr. Ringer justly cautions against such excessive doses, and records two instances in which the patient suddenly fell back dead. The disease no doubt proves suddenly fatal, sometimes independently of any remedy; but the powers of digitalis in a tincture are much too uncertain to be relied upon as safe in such enormous doses. Bromide of potassium has been found of great use in calming the excitement of delirium and procuring sleep, especially in the earlier stages of the disease, before the delirium has become furious. The dose may be xx. or xxx. grains every two hours. Its good effects are, however, very uncertain when given alone; less so when combined as suggested by Dr. Lauder Brunton (Ringer).

In some cases purgative remedies are indicated from the first. "These cases are known by the flushed, bloated appearance, the very foul tongue, the *mawkish*, peculiar odor of the breath, the fetid discharges from the bowels, and the history of a recent surfeit of eating as well as drinking" (W. T. Gairdner, "Clinical Medicine," p. 271).

Opium may be administered with safety and advantage only in protracted cases, provided the quantity given in twenty-four hours is never allowed to exceed the full dose which would be considered safe for a healthy person of the age and sex of the patient. Where it appears to be indicated in protracted cases, it ought to be pushed as rapidly as possible for two or three doses, while its effects are carefully watched. Its use must be discontinued for at least a good many hours as soon as a full maximum amount of ʒ iss. to ʒ ii. of the tincture, in all, has been reached, or even sooner if the pupils have *become contracted during its use*. This remedy should always be given in the fluid form, otherwise it is apt to accumulate in the bowels, owing to the weakened state of the digestion; and a laxative, or even a purgative, should be alternated with opium, followed by a bitter tonic, which always operates favorably in lingering cases of nervous and dyspeptic exhaustion. Narcotics are only safe in *delirium tremens*

when they are given with the object of aiding and seconding the natural cure of the disease, employed in moderate doses, and given only at the latter stages. The *heroic* use of them, as heretofore too often advocated by most eminent physicians, is now recognized as a treatment which merely substitutes *narcotic* poisoning for *alcoholism* or *delirium tremens*.

Envelopment in a wet sheet, and then a blanket round the wet sheet, is recommended by Dr. Wilks and Niemeyer as a valuable sedative appliance. As soon as hot vapor so generated surrounds the patient, he falls into a quiet sleep (*Med. Times*, Sept. 19, 1868).

Alopecia Areata—*See Tinea Decalvans.*

Anæmia.—*Definition.*—A disease in which there is either a relative diminution of the mass of blood (Andral), with the general composition and distribution of the blood altered from the normal standard; or in which the mass of blood is diminished, and the liquor sanguinis is watery, poor in albumen, and containing an excess of salts. These conditions, co-existing with relative deficiency of the red blood-corpuscles (Vogel), and a diminution of the urine-pigment (Parkes), with altered innervation of the vascular system (Lebert), constitute anæmia.

Treatment.—The energies of the physician must be directed to discover and counteract the cause of the anæmia. Nutritious substances must be supplied for diet, in the shape of easily digested meats and broths. The purely tonic treatment, in the combination of air, exercise and diet, must be carried out as far as practicable. A change of air is absolutely necessary, and generally also of diet. *Iron* is one of the best medicinal remedies; and it ought to be taken as largely diluted with water as possible. The astringent preparations are pre-eminently tonic; and are especially useful when the anæmia is associated with or dependent upon inordinate discharges. Solution of the perchloride of iron, in the form of tinctura ferri perchloridi, in doses of ten to thirty minims in water, or in an infusion of quassia, or of calumba, has properties in common with the numerous salts of iron, and is one of the most reliable preparations. If the anæmia is associated with diarrhœa, or menorrhagia, or leucorrhœa, the solution of the pernitrate of iron, in similar doses, is attended with benefit. A preparation which is no longer new to the pharmacopœia—the syrup of the phosphate of iron—possesses the general properties of the ferruginous compounds,

and is of great service when the anæmia is associated with certain forms of dyspepsia, or with amenorrhœa. It invigorates and increases the powers of digestion, and may be given to the extent of one to three drachms for a dose in water. Another phosphatic preparation of very great value is that which was devised by the late Dr. Easton, Professor of Materia Medica in the University of Glasgow. Although it is not in the pharmacopœia, and although its mode of preparation had not been published before Dr. Easton kindly sent it to me for publication in the previous editions of this work, yet the combination has become very popular throughout the country as a valuable tonic in anæmia and cachexiæ generally. As such it has been largely used by my colleagues, Professors Maclean and Longmore, amongst the used-up cachectic and anæmic soldiers under treatment at the Royal Victoria Hospital at Netley; and I would add my testimony to its being a most valuable medicine in general practice.*

*The following is the original formula devised by Dr. Easton for the preparation of the phosphates of iron, quinine, and strychnia, in the form of a syrup ("Syrupos ferri, quiniæ et strychniæ phosphatum"):—℞ Ferri Sulph. ʒ v.; Sodæ Phosph., ʒ vi. (a little more phosphate of soda gives a better result, say ʒ i.); Quiniæ Sulph., grs. cxcii.; Acid Sulph. Dil., q. s.; Aquæ Ammoniæ, q. s.; Strychniæ, grs. vi.; Acid. Phosph. Dil., ʒ xiv.; Sacchar. Alb., ʒ xiv. "Dissolve the sulphate of iron in 1 oz. boiling water, and the phosphate of soda in 2 oz. boiling water. Mix the solutions, and wash the precipitated phosphate of iron till the washings are tasteless. With sufficient diluted sulphuric acid dissolve the sulphate of quinia in 2 oz. water. Precipitate the quinia with ammomia water, and carefully wash it. Dissolve the phosphate of iron and the quinia thus obtained, as also the strychnia, in the diluted phosphoric acid; then add the sugar, and dissolve the whole, and mix without heat. The above syrup contains about one grain phosphate of iron, one grain phosphate of quinia, and one thirty-second of a grain of phosphate of strychnia in each drachm. The dose might therefore be a teaspoonful three times a day. The amount of phosphate of quinia might be increased according to circumstances; and if eight grains of strychnia were employed in place of six, as in the above, the phosphate of strychnia would be in the proportion of the one twenty-fourth of a grain in every fluid drachm of the syrup. I would scarcely venture on a much larger dose. In cases of delicate children, with pale countenances and deficient appetites, I have given, with great benefit, a combination of equal parts of the above syrup and of that prepared by Mr. Edward Parrish, often called chemical food. To children between two and five years of age, the dose of this combination may be a teaspoonful three times daily. The preparation ought to be kept as much as possible from light and air, otherwise the preparation loses its characteristic opaline appearance, and assumes a fawn color; a precipitate may be thrown down." It is prepared by Messrs. Murdoch, Chemists, in Glasgow; by Duncan and Flockhart in Edinburgh; by Randall and Sons, Southampton; and by Savory and Moore, in London.

In some cases the astringent preparations of iron are not suitable, and are apt to irritate delicate stomachs, or those in whom any inflammatory local disease exists. For delicate females and children the saccharated carbonate of iron is a most valuable preparation, in the form of mistura ferri composita to the extent of one to two ounces for a dose; or in the form of the pillula ferri carbonatis, in doses of from five to twenty grains in the twenty-four hours. The citrate of iron and ammonia is another remedy which possesses scarcely any astringency, and may often be given in cases of anæmia when the stomach will not bear more astringent preparations. Five to ten grains of this salt may be taken during the twenty-four hours. It is best taken during effervescence, prescribed in solution of citric acid, and not in bicarbonate of potash solution. If it is put into the latter, carbonic acid will be given off, and probably burst the bottle. Tincture of orange-peel is the best flavoring agent; but as the salt will not dissolve in the tincture alone, it is necessary to dissolve the salt in water first, and then add the tincture, otherwise the division into doses is impracticable (Squire). When it is desirable to continue the use of iron for a long time, as in the anæmia of neuralgic affections or tic-douloureux, or to give it in large doses, the magnetic oxide of iron is the best preparation to administer in doses of five to twenty grains twice or thrice a day in water. The reduced iron—the ferrum reductum of the British pharmacopœia—is also a remedy which does not possess the astringent properties of the other preparations, and is one of the most powerful remedial agents in cases of anæmia. One to five grains may be given several times a day in powder or in pill. It has no taste, and one grain is equal medicinally to five grains of the citrate of iron. The citrate of iron and quinine, either in solution or in the form of a pill, is a new and useful preparation, in doses of five to ten grains three times a day.

Generally, such a preparation of iron must be found as will not check the digestion of other food. If loss of appetite and feverishness follow its use, the form of the remedy is probably unsuitable, and requires to be changed. Chlorine, in the form of warm hydrochloric acid baths, is highly spoken of by Dr. T. K. Chambers, as an agent of great value, and as a directly restorative medicine in anæmia (l. c., p. 332). The bowels are to be kept regular by four grains of the pills of aloes and myrrh taken at bedtime. Ferruginous remedies are always of use when we have reason to believe that there

is a diminished energy in the formation of blood-cells; and if the urine be pale and almost neutral during the whole of twenty-four hours, it is as good an indication for the use of iron as the pallor of the skin in cases af anæmia (Parkes). Dr. Trousseau was of opinion, however, that for anæmia, complicated with tubercles, iron preparations were unsuitable, as tending to hasten their development. Dr. Clymer has found arsenic a valuable remedy combined in the form of chlorides of arsenic, iron, and quinine.

Anasarca.—*Definition.*—An accumulation of serum in the areolar tissue throughout the body; a general œdema or anasarca with effusion into one or more of the large serous cavities.

Treatment of general dropsy is regulated by the nature of the disease which causes the dropsical state, and will be considered under *Heart Disease* and *Kidney Diseases*.

Angina Pectoris.—*Definition.*—Pain or spasm of a weakened heart (Chevers), referred to the lower part of the sternum, or to the præcordial region, extending through the chest to the left scapula, and up the sternum to the root of the neck. The pain is characterized by its suddenness, its severity, and by a sense of constriction or of burning. It compels the patient, if walking, instantly to stop, and almost prevents inspiration. The pain is felt likewise in the left shoulder, whence it sometimes reaches to the elbow, rarely to the hand, often with a sensation of numbness in the parts. A tendency to syncope exists, associated with intense anxiety, and a sensation of approaching dissolution.

Treatment.—The indications are to be found in a study of the lesions on which the paroxysms mainly depend. Medicine can do little more than mitigate the severity of an attack. This is generally best done by diffusible stimulants, such as brandy, ether, chloroform, ammonia, chlorodyne. Alcohol, in small doses often repeated, sesqui-carbonate of ammonia, in doses of from three to five grains, the muriate of ammonia, in doses of from ten to twenty grains, have each powerful stimulant effects. Hot bottles and sinapisms should be applied to the feet. The bowels may require to be rapidly and efficiently acted upon. Thirty minims of tincture of digitalis, repeated at the end of half an hour, give great relief. It has also been beneficial when the angina was associated with fatty heart. In that form of angina pectoris where there is distension of the right ventricle, accompanied

by palpitation, dyspnœa, and lividity of the face (cardiac asthma), the frequent use of digitalis exercises a stimulating influence on the sympathetic cardiac ganglia and muscular fibres (Fothergill).

Aorta, Aneurism of.—*Definition.*—A spontaneous circumscribed partial dilatation of some portion of the aorta, consequent on lesion or degeneration of its walls.

Treatment.—Local bleeding is useful when there are pain and tenderness over the aneurismal sac. General blood-letting may be useful if the circulation is excited, and the patient be of full habit, but not on the principle advocated by or ascribed to Valsalva. Of all remedies digitalis, aconite, belladonna and veratrin are the most useful in tranquillizing and regulating the action of the heart. The deposition of fibrine from the blood is more prone to take place when the circulation is "slowed." It is the principle of treatment in the cure of aneurisms by pressure. The current of blood is not entirely stopped, but is rendered more slow, so as to have an amount of stagnation of blood in the sac favoring the separation of fibrine and its coagulation. A diminution of from ten to fifteen pulsations of the heart in the minute will greatly tend to the filling of the sac with coagula (Fuller). The medicinal agents which tend to promote this result are, ergotine, gallic or tannic acids, tincture of steel, acetate of lead, and iodide of potassium. Mr. Joliffe Tufnell, of Dublin, has advocated the treatment of aneurisms of the thoracic and abdominal aorta on the principle here enunciated—namely, that of "slowing" the circulation. It consists of restricted diet and perfect rest in the horizontal position, for periods varying from eight to thirteen weeks, combined with the employment of such remedies as may be necessary for special ends. The horizontal posture must be *strictly and absolutely maintained*, in a light and cheerful airy room, into which the sun shines, and from which the patient may be able to have as cheerful a view as possible out of the window. The diet must be confined to *three* meals, served at regular intervals, and restricted to the following in kind and in amount:—*Breakfast*—Two ounces of white bread and butter, with two ounces of milk or cocoa. *Dinner*—Three ounces of broiled or boiled meat, with three ounces of potatoes or bread, and four ounces of water or light red wine. *Supper*—Two ounces of bread and butter, and two ounces of milk or tea. These diets should make, in the aggregate, ten ounces of solid and eight ounces of fluid in the twenty-four

hours and no more. The object of the special diet is to maintain life on as little food as possible, without inducing restlessness, as in some irritable constitutions, but if such restlessness should occur, a little more food may now and then be allowed. Anodynes, aperients, narcotics, sedatives, and tonics are also useful aids in the management of the case. Of anodynes lactucarium is the most valuable, given in the form of a pill, by itself or combined with humulin and hyoscyamus (*Med. Rep. Army Med. Dep.*, 1862, p. 472). The patient must avoid everything which tends to increase the action of the heart. Moderate living, without the plethora of excess, but with sufficient nutrition to maintain the circulation at a uniform flow, is the point to aim at. Fatal results may speedily follow any marked change of diet and regimen (Copland). Pain and depression will generally be subdued by the hypodermic injection of morphia, commencing with one-fourth of a grain. Cough is to be relieved by sedatives and expectorants. Dyspnœa may require tracheotomy Dropsy. may be lessened by mercury, digitalis, squills, juniper, and decoction of broom-tops.

Since 1861, the following three special modes of treating aneurisms have been proposed, besides Mr. Tufnell's dietetic method :—(1.) The introduction of a quantity of fine iron wire into the aneurismal cavity, with the intention of supplying an extensive surface over which fibrine may coagulate. The late Dr. Murchison and Mr. Charles H. Moore practised this method in a case of saccular aneurism of the ascending aorta projecting through the anterior wall of the left side of the chest. Twenty-six yards of wire were passed through a small canula inserted into the tumor when it was evident that the patient could not live many days. With some modifications it was shown that the experiment might be justifiable in some cases of sacculated aneurisms only (*Med.-Chir. Trans.*, Vol. XLVII., p. 129, London, 1864). (2.) The method of *rapid* pressure treatment, as practised by Dr. William Murray, of Newcastle-upon-Tyne, and Lecturer on Physiology in the University of Durham. It has been applied to aneurisms of the abdominal aorta. The cure by this method takes place rather by the coagulation of blood in the sac from sudden cessation of the current, than to any deposit of fibrine. The patient requires to be completely under the influence of chloroform, so that he may suffer the application of a powerful pressing instrument on sedative parts, and so as to restrain all muscular movement. All

movement of the blood in the sac must be completely arrested, and maintained in a motionless state, as in the application of a ligature to the vessel for aneurism. The duration of the treatment and maintenance of pressure can only be measured by the result as to the time when pulsation ceases in the tumor. The first condition of success is, that complete arrest of circulation in the tumor must be steadily maintained. Irregular pressure for ten hours has been known to fail. Consolidation has occurred in twenty minutes in a case of Dr. Heath's, of Sunderland, when complete and steady pressure was maintained, having failed in a first trial with irregular pressure. (3.) Dr. Roberts, of Manchester, and Dr. G. W. Balfour, of Edinburgh, have each collected cases, some of them under their own care, in which the treatment of aneurism of the aorta by iodide of potassium was persistently carried out with remarkable beneficial results. The dose varied from five, seven, ten, fifteen, and twenty to thirty grains three times a day; and the relief of pain, one of the earliest symptoms of amendment, does not follow till an efficient dose has been taken. It is better to begin with twenty or thirty grain doses at once, and intermit or suspend them for a day or two, if circumstances indicate the necessity of such step. The object is to saturate the system with the drug as speedily as possible. It is believed to owe its curative agency to its power of increasing the coagulability of the blood. A few weeks may be sufficient to bring about the curative result; but Dr. Balfour's experience is, that any considerable amendment can only be procured by keeping the patient for many months, perhaps twelve or more, persistently saturated with the drug. (Balfour, *Edin. Med. Journ.*, July, 1868, p. 33; Chuckerbutty, in *Brit.. Med. Journ.*, July 19 and 26, 1862; Roberts, *Brit. Med. Journ.*, January, 1863). The strict enforcement of the recumbent position is an adjuvant of paramount necessity in the treatment of all aneurisms. Tracheotomy may prolong life in some cases where stridor exists, if the laryngeal symptoms are the source of immediate danger (W. T. Gairdner).

Apoplexy.—*Definition.*—Hemorrhages within the skull or spinal canal, consequent on the rupture of blood-vessels in the membranes or substance of the cerebro-spinal nervous system.

Treatment.—It may "incline the balance to recovery or death." Bleeding from the veins of the arm, the jugular vein, or the temporal artery, has been the most conspicuous

method of treatment from the earliest times. It is now employed only under the following circumstances: (1.) When there is an obvious increase of intracranial pressure, it is practiced so as to bring about indirectly a diminution of arterial tension. With such intracranial pressure there is cerebral hyperæmia, and when a paralysis of the respiratory or vagus centre is threatened, then it is that venesection by diminishing this pressure may have the effect of prolonging life. Patients have thus been roused from a state of coma. Clinically, the indications for venesection under such conditions in cerebral hemorrhage are: A turgid face with distended veins, and increased pulsation of the carotids; a powerfully acting heart; the radial artery of normal tension; the pulse of normal frequency, or slow and regular; when the respiration is uniform, but of snorting character; when the patient is strong and not too old. Slow and deep respiratory movements, with stertor (indicating paralysis of the respiratory centre), and combined with rapid pulse (indicating paralysis of the vagus), add greatly to the necessity of immediate venesection. The beneficial action of the remedy is shown by the pulse becoming softer, more subdued, and more regular. Venesection is out of place in all cases which do not correspond to this description (Nothnagel). Large bleedings are to be avoided. The blood ought to be permitted to flow from a large opening, in order more rapidly to relieve the congestion, to check, if possible, further effusion of blood, and to divert its active flow from the head. The head and shoulders should be raised while the blood is flowing.

On the other hand, in some cases, bleeding during an apoplectic fit hastens a fatal result—collapse occurring during or immediately after venesection, from which the patient never recovers. It is to be avoided in the old and decrepit, where marked arterio-sclerosis is present; also if the pulse be small and slow, feeble, or almost imperceptible, the skin cold and clammy, with a tendency to death by syncope; if the heart's action be feeble or weak, and the pulse irregular; if the patient has been of intemperate habits, or is suffering from organic disease of the heart and arteries; or if there is a gouty or rheumatic history, no advantage is to be gained by the abstraction of blood at this time and in this way. Blood-letting is therefore absolutely contra-indicated under the following circumstances: (*a.*) anæmia, (*b.*) aortic valvular disease, (*c.*) in cases commencing with syncope. In such cases the use of stimulants must be had recourse to in order

to prevent paralysis of the heart. The clinical indications for stimulants are: A pale collapsed expression of face, absence of venous turgidity, slight arterial tension, heart's impulse weak, respiration hesitating and intermittent. It may, in some exceptional cases, be necessary to follow or combine venesection with stimulants. The stimulant agents may be (1.) Such as will rouse the depressed activity of the respiratory centre,—*e. g.*, sudden sprinkling of the skin with cold water; the application of ammonia to the nostrils; (2.) substances which will stimulate directly the heart's action—*e. g.*, musk, strong coffee, wine, and preparations of ammonia. If the patient cannot swallow, enemata of musk may be used (Nothnagel). Many still believe with Trousseau, that in *all* cases; grave or slight, patients do better without either bloodletting or purgatives. He considers the part played by congestion of the brain to have been much exaggerated. Dr. Althaus, also, is of opinion (after an experience of more than 400 cases of hemiplegia from cerebral hemorrhage) that the former universal treatment by venesection was thoroughly irrational: and he considers that the condition of the brain during cerebral hemorrhage is not one of congestion (as was formerly believed), but is one of anæmia; that the organ not only loses blood largely, but is also, through compression from the clot, unable to receive a fresh supply; that death takes place chiefly from anæmia; and that by venesection we hasten the fatal result. Instead of doing nothing, however, he recommends ergotine to be at once injected hypodermically (a grain of Bonjean's ergotine every hour, or even every half hour), into the subcutaneous areolar tissue. Additional chances of recovery may be given by applying to the head cold cloths, or crushed ice in a bladder, and mustard cataplasms to the feet; also, by placing a drop or two of croton-oil on the tongue, and by throwing up a cathartic enema of castor oil and turpentine.

After the patient has in some degree revived, some time should be allowed for the absorption of the blood effused before deciding upon the future treatment. A few hours having elapsed, the conduct of the practitioner should be guided by the occurrence or not in the patient of pain of the head, which may be taken as a measure of the fullness of the brain, and its tendency to inflammation; but the less that is done during the first three or four days the better. If pain in the head continue, ten to twelve leeches should be applied from time to time, till that symptom is entirely relieved; or, supposing the

pulse to be full and strong, and the patient free from headache, yet, under these circumstances, leeches should be applied to the head, to subdue that reaction which so generally takes place from the fourth to the seventh day. The further treatment of the case is by moderately purging the patient, both as a means of relieving the head and of improving the secretions of the alimentary canal, which are often black and fetid. Active and searching purgatives generally do good at this stage. Five grains of calomel with a drachm of compound jalap powder, given as soon as the patient can swallow, and followed up by black draught, or by an ounce of sulphate of magnesia with camphor mixture every four or six hours, and continued, according to its effects, for a greater or less length of time, are the best means we have for promoting recovery, and for preventing a relapse. In cases of hypertrophy of the heart, without valvular disease, eight to ten minims of digitalis may be added to each dose of the purgative medicine. If the power of swallowing is in abeyance, then three or four drops of croton oil, with five grains of calomel, rubbed up with fresh butter, should be put on the back part of the tongue, and stimulating enemata thrown up the rectum. The following are recommended by the late Dr. Tanner:

1. *Enema of Turpentine and Castor-Oil.*—℞. Olei Ricini, Olei Terebinthine, a a ℥ iss.; Tincture Asafœtidæ, ℥ ii.; Decocti Avenæ, ℥ xii.; misce, fiat enema. To be thrown up the rectum by means of a long stomach-pump tube.

2. *Croton Oil Enema.*—℞. Olei Ricini, Olei Terebinthinæ, a a ℥ i., Olei Crotonis, m vi., Decocti Avenæ, ℥ iv.: misce, fiat enema.

Although turpentine is objected to by some on account of the intoxicating effects which it is sometimes apt to produce, it is nevertheless an efficient remedy where torpor and insensibility exist. It is of great importance to empty the rectum and lower bowel.

If the intestines are distended by gases, an enema of castor oil and rue may be given:

3. *Castor Oil and Rue Enema.*—℞. Confectionis Rutæ, ʒ i.; Olei Ricini, ℥ i.; Tincturæ Asafœtidæ, ʒ ii.; Decocti Avenæ, ℥ vii ; misce (Practice of Medicine, 4th edition, p. 653).

Apprehension of a relapse being at an end, the patient is in general most willing to believe that the palsy which may remain is a mere local disease, and to submit to any treat-

ment for its removal; but every attempt to act locally on the muscular system is prejudicial so long as any central irritation exists. Such remedies are neither theoretically nor practically useful. (See "Paralysis.") Active or passive exercise of the muscles are remedies highly beneficial. The induced current of electricity is also beneficial. It seems to improve the nutrition of the paralyzed muscles, which tend to atrophy from long disuse, and paralysis tends also to get worse from diminished excitability of the nerves. Local faradization by induced currents of electricity gives artificial exercise to these muscles, and thereby improves their functional and nutritive properties.

Dietetic and Prophylactic Treatment.—The diet of the patient should be limited to milk, boiled vegetables, light puddings, and fish. At no subsequent period ought he to indulge in a full animal diet, or to drink undiluted wines. At the same time, too lowering a regimen is to be avoided, as thereby the irritability of the system and the heart's action generally is increased. All the causes of the disease already fully referred to should be avoided, counteracted, or overcome. The diet and the bowels should be carefully regulated, and the patient placed under the best possible hygienic influences. A sojourn at the moderately warm waters of Wildbad, Pfäffers, Ragatz, and Laudeck (Teplitz with great caution), and Rehme and Nauhein, are recommended by Niemeyer and Nothnagel, with careful regulation of diet and exercise.

Arteritis.—*Definition.*—Inflammation of the textures of an artery.

Treatment.—Leeches should be applied freely over the course of the vessel; and large doses of opium, or of ether with chloroform, may be given to relieve pain and dyspnœa. Iodide of potassium or colchicum may also be indicated, according to the constitutional morbid condition which has brought about the lesion.

Arthritis, Rheumatic—*See Osteo-Arthritis, Chronic.*

Ascites.—*Definition.*—A collection of serum slowly effused into the cavity of the peritoneum.

Treatment.—When ascites occurs without any obvious organic cause, and without albumen in the urine, the best remedy is the bitartrate of potash, administered in divided doses, as one drachm three times a day, or every six hours; or in one large dose, as half an ounce, combined, if the

paitient's bowels be confined, with ten to fifteen grains of jalap. When the smaller doses are used, it may be useful to add ten grains of the citrate or tartrate of iron to each dose. If these remedies should fail, one-sixth to a half a grain of the extract of elaterium every night, or every other night, may be given. When ascites is combined with anasarca, squills afford most relief. Five to eight grains of the pulvis scillæ, three times a day, generally relieve the dropsy. If the stomach be irritable, half a grain of opium should be added to each dose. When the ascites arises from disease of the heart, the kidneys being sound, and the urine free from albumen, the treatment must have reference to the nature of the cardiac lesion. If the valves of the heart are diseased, the patient may be greatly relieved by the administration of tonics, stimulants, and saline or drastic purgatives. An ounce and a half of camphor mixture, with a drachm of the spirit of nitrous ether, fifteen minims of the tincture of hyoscyamus, and a drachm of the sulphate of magnesia will form a draught which, taken three times a day, may greatly reduce the dropsy. The tincture of squills (mx. to mxx.), with a drachm of the acetate of potash, has occasionally succeeded. Small doses of elaterium, as one-eighth to one-fourth of a grain three times a day, is a medicine that is also sometimes useful. Should the liver be inflamed or hypertrophied, without other alterations of structure, the dropsy may disappear with the cure of the hepatic disease. Bleeding by leeches, if the hepatic lesion be due to the congestion of inflammation, and the neutral salts, such as the sulphates of magnesia or soda, or moderate doses of calomel, may give relief. If due to a cirrhotic liver paracentesis abdominis ought to be repeated as a systematic method of treatment (F. T. Roberts). Abdominal pains are relieved most effectually by fomentations. The bowels are often greatly constipated, and require drastic purgatives, as the black draught, castor or croton oil, or even elaterium. In ascites depending on enlarged spleen when it is simply hypertrophied, the bromide of potash, and the iodide of potassium, in doses of five to eight grains three times a day, have been found useful. My friend and colleague, Professor Maclean, has found that rubbing the biniodide of mercury, in the form of an ointment, in the proportion of 15 grains of the biniodide to one ounce of lard or vaseline, on the skin over the enlarged spleen, has a marked beneficial effect in reducing the enlargement. The ointment, in a piece about as large as a nutmeg, is to be rubbed into the skin

while the patient sits before a strong fire or in the rays of an Indian sun ; in the evening of the same day, half the amount is to be rubbed in lightly ; and the ointment is not to be repeated at a less interval than 14 days. The invalided soldiers suffering from splenic enlargement invariably ask for a supply of the remedy when they go from hospital. The biniodide of mercury, similarly used, has been of great service in reducing the swelling of a goitre. The dropsy which occurs in young chlorotic women, in whom the urine contains albumen (the kidney being healthy in structure though disordered in function), is generally curable,—the most efficient remedy is the bitartrate of potash in drachm doses three times a day, combined with iron.

Asthma, Hay.—*Definition.*—A peculiar catharral affection occurring during the summer months, especially during the inflorescence of the grasses, or during the drying and conversion of the newly-mown grass into hay in May, June, and July.

Treatment.—Regarding it as the result of irritation (specific or mechanical) from fine particles of matter (indefinite dust or specific powder) floating in the air, the use of a respirator of fine cotton, or of crape or cambric in several folds, should prevent the affection, and ought to be tried by those who suffer every year about the months of May and June. In other respects the local catarrh must be treated as described under "Bronchial Catarrh," and "Bronchitis."

Asthma, Spasmodic.—*Definition.*—A disease which culminates in paroxysmal attacks of difficult breathing, of varying duration. The dyspnœa seems to be immediately dependent on more or less extensive contraction of the smaller bronchi, due to spasm of their circular fibres. The breathing is accompanied by a wheezing sound, a sense of constriction in the thorax, great anxieties, and a difficult cough. The attack usually terminates by the expectoration of a quantity of mucus from the lungs, which varies considerably in appearance and in amount. In some instances the mucus is thick and heavy, in others it is light and frothy, whilst in the severer forms there may be only a few dark pellets coughed up before relief is obtained (Pridham). In the hours immediately succeeding the fit, a remarkable diminution of the urea and chloride of sodium may occur, which would imply a considerable arrest either of formation or elimination, probably the former (Ringer, Parkes) ; or to the starvation that is generally enforced at that time (Salter).

Treatment comprises, (1.) What should be done during the fit; and,(2.) during the intervals. When a patient is laboring under a fit of either form of asthma, to tranquillize his suffering and shorten the attack is the aim of treatment. Any exciting case must be removed. An undigested meal, or constipation, must be got rid of—by an emetic in one case, or by an enema in the other. The patient should have a strictly tonic regimen; and camphor mixture, to the extent of about an ounce and a half, combined with a drachm of the spirits of nitrous ether and some morphia, may be given every hour, or every two hours, for a short time. Some milder narcotic may be substitued for morphia, as tincture of hyocyamus, to the extent of about fifteen drops for each dose. Or asafœtida, castor, musk, or hydrocyanic acid, to the extent of miij. every six hours, may be substituted. If the fit should occur after a hearty meal, and after an emetic has been given, the tincture of rhubarb, or the sulphate of magnesia, should be continued in repeated small doses. If the attack be long, arrow-root or sago, with small quantities of wine or brandy, should be given to support the patient under his exhausting sufferings. Ipecacuanha, tartar emetic and tobacco are the drugs which most rapidly relax spasm as direct depressants. There is, however, great danger in the use of the latter, from unmanageable and dangerous collapse. Tobacco ought never to be indulged in by the asthmatic, except as an agent in the cure of his disease. Then only can he look to it for relief, and it should be smoked from a pipe. Ipecacuanha ought to be given in a dose of twenty grains at the onset of the paroxysm. The feelings of the sufferer should be consulted as to the temperature to which he should be exposed during the paroxysm. Where there is any organic lesion the fresh air is grateful and reviving. On the contrary, when the paroxysm is purely a spasm of the bronchial tubes, warmth, by relaxing spasm at their ultimate divisions, is generally more useful than cold. Patients learn by experience what will give them most relief. Strong coffee, spirits and water, ice rapidly swallowed, may suit individual cases.

The treatment during the interval is all-important. Few cases will be found of true spasmodic asthma which are not entirely under the control of well-regulated dietetic management. By many physicians a rule of life as to diet is the only certain treatment of asthma. Extremely strict dietetic treatment and sedatives during the intervals of the paroxysms must be prescribed. A plan of treatment somewhat as follows

may be laid down, after that suggested by Mr. Pridham of Bideford and Dr. Hyde Salter of London :—The secretions from the bowels are first to be corrected by Pilulæ Aloes cum Myrrha, gr. iii. ; Pilulæ Hydrargyri, gr. i. ; Extracti Taraxaci gr. ii.; Extracti Strammonii, gr. ss., made into two pills to be taken at bedtime, followed by a saline aperient in the morning. Or giving, every alternate night, Pil. Hyd., gr. iv.; Pulv. Ipecac., gr. i., in the form of a pill. And on the following morning, Mist. Sennæ comp., ℥ i. ; Bicarbonatis Magnesia, gr. x. ; Bicarbonatis Sodæ, gr. viii. ; and during the day small doses of compound rhubarb powder. After thus attending to the general secretions for about ten days, a strict diet is to be commenced, which must be regularly weighed out and adhered to, the hours of meals being fixed. (1.) *Breakfast* at *eight* A. M., to consist of half a pint of green tea or coffee, with a little cream, and two ounces of dry stale bread. Dr. Salter allows an egg *or* (*not and*) a mutton chop, or some cold chicken or game. Tea is better than coffee, and milk and water better than either. (2.) *Dinner* at *one* P. M., to consist of two ounces of fresh mutton, without fat or skin, and two ounces of dry stale bread or well-boiled rice. Beef and lamb should be rarely eaten, pork or veal never. There should be no cheese and no dessert (Salter). Three hours *after* dinner (not sooner) half a pint of weak brandy and water, or whisky and water, or dry sherry and water, may be taken, or toast-water *ad libitum*. Water is the best fluid to drink. (3.) *Supper* at *seven* P. M., to consist of two ounces of meat as before, with two ounces of dry stale bread. The patient is not to be allowed to drink any fluid whatever within one hour *before* his dinner or supper, and not until three hours after either of these meals. At other times he is not limited as to drinks, otherwise than that all malt liquors are to be prohibited. Soda or seltzer-water may be indulged in when thirsty. With this dietetic treatment, sedatives, such as three grains of the extract of conium, are to be taken four times a day—namely, at the hours of seven, twelve, five, and ten,—the dose to be gradually increased to five grains four times a day. To each of these pills a fourth of a grain of the Extract of Indian hemp may be added, which may be gradually increased to one grain in each dose. Under this treatment in a few days distressing symptoms subside ; and after the regimen has been strictly persevered in for at least a month, two ounces more of meat may be permitted, if digestion is sufficient. The stools must be repeatedly seen by

the physician ; and the stomach must not have more to do than it can accomplish. The powers of digestion are known to be recovering when there is a craving for food as the hour of nourishment arrives. If flesh is gained, strength improves ; and while the tongue cleans, the appetite improves, the distension of the stomach lessens, and the powers of digestion recover. The patient ought to be able to sleep six or seven hours at a time, and to lie in bed all night. If these results follow, the ultimate cure of the disease may be looked for ; but it may at the same time be taken for granted that the asthmatic can never with impunity eat and drink as other people. It is only by the exercise of self-denial that the patient has it in his own power to live a life of comparative ease and comfort. Many patients not possessed of such resolution, self-denial, and strength of mind, will say such dieting does not suit their constitution, and that they cannot or will not persevere ; but no trial of the remedy can be conconsidered sufficient which does not embrace a period of at least six months, the physician taking care to ascertain the weight of the patient, his age and height, before commencing any treatment. It is difficult to persuade many people to live so abstemiously. Many cannot control their appetite ; or they believe that in so limiting themselves in regard to diet they will injure their constitution. It is necessary to subdue by sedatives rather than opiates the abnormal ravenousness of appetite. Asthmatics are generally dyspeptics ; and the most simple rule regarding diet is :—Let no food be taken after such a time in the day as will allow digestion being completed or the stomach empty before going to bed. The time when the last solid food should be taken will depend upon what the bedtime is. If ten, or half-past, then three or four should be the dinner hour, after which no more solid food should be eaten.

Open air exercise must be freely taken, but not within three hours after eating animal food, and the exercise must be always short of fatigue. The greatest punctuality is necessary as regards the taking of food, of exercise, and of medicine ; and the bowels should act immediately after breakfast, either naturally or by enema. Success depends on the regularity with which all the functions of the body can be performed ; and care should be taken to rest body and mind, at least, for one hour after food. Smoking stramonium, the inhalation of chloroform, or of ether, or both, although they appear to soothe and mitigate the paroxysm in

some cases, yet they do not appear to shorten the attack in any. The inhalation of nitrite of amyl has been recently recommended. The fumes of stramonium are to be collected in an inverted glass bowl with a narrow mouth. The bowl being charged to its full, is placed under the mouth of the patient, who is directed to inhale, to the fullest extent in his power, the smoke which has been collected in the bowl. Or the stramonium may be smoked like tobacco, "then puff the smoke into a tumbler, and inhale it cold into the lungs" (Bullar). Or it may be smoked as an Oriental smokes the hookah, in which the smoke is purified by being passed through water. Cigars and cigarettes of stramonium are now sold by the chemists. The fumes of brown paper saturated with a solution of nitrate of potash sometimes also relieve the spasms. Indian hemp, in doses of from two to four grains of the extract, or thirty minims of the tincture, will often relieve the spasm for the time being, but may fail ever after, (See Watson, "Lectures on the Practice of Physic," Vol. II).

Only one remedy—jaborandi, and its alkaloid pilocarpin—has been found not only to remove the urgent symptoms of asthma, but to exercise, at the same time, a favorable influence on the disease itself. It produces a powerful revolution in the distribution of the blood, by attracting a large volume to the skin and salivary glands; and by diminishing its volume through copious perspiration and salivation, congested internal organs are relieved in a proportional degree. Dr. Berkhart has found the alkaloid preferable to jaborandi, because—(1.) It acts more rapidly; (2.) it does not produce strangury; (3.) the dose can be more accurately regulated. In cases where the cardiac muscles are in a state of fatty degeneration, the influence of pilocarpin may induce the most alarming symptoms; which soon spontaneously subside, the heart regaining its previous force. But if it lingered to do so, a subcutaneous injection of $\frac{1}{120}$ or $\frac{1}{60}$ grain of atropine, or one drop of liquor atropiæ (B. P.), immediately restores the balance. Pilocarpin, or muriate of pilocarpin, is more suitable in the treatment of the younger asthmatics, but is by no means contra-indicated in patients of more advanced age. The dose should not exceed one-third of a grain. Dr. Berkhart has never used more than ten drops of a 2 per cent. solution, injected under the skin of either arm. During the action of the drug, the patient should preserve the recumbent posture—which the almost immediate relief obtained will enable him to do—and he should be carefully watched until

the effect has passed off. It is desirable to have a solution of atropine or liquor atropiæ always at hand, in case of need. It is well, also, not to use pilocarpin soon after the patient's meals; if the dyspnœal seizure occur under these circumstances, there are, it is needless to say, other remedies more suitable (*Brit. Med. Journal*, June 19, 1880). Similar results may be obtained in less urgent cases by the internal administration of the powder of the leaves, in doses of 30 to 90 grains, infused in boiling water—the water and grounds being swallowed together.

Athetosis.—*Definition.*—A form of spasm hitherto observed chiefly in the muscles of the hand and of the forearm, characterized by the impossibility which the patients find in keeping the fingers and toes in any desired position; and the inability to prevent a continuous action of them, which is slow, regular, and never ceasing, except when the limb is supported, or during sleep. The movements are not disorderly, like hysteria and chorea, nor tremulous, like those of paralysis agitans and various forms of sclerosis.

Treatment.—Beyond improving the general health, any medicinal treatment can only be determined upon by a special study of each particular case. If syphilis has been an antecedent, its appropriate remedies must be had recourse to.

Beri-Beri.—*Definition.*—A constitutional disease, expressed in the first instance by anæmia, and culminating in acute œdema. It is marked by stiffness of the limbs, numbness, and sometimes by paralysis of the lower extremities, oppressed breathing (anxietas in paroxysm), and a swollen and bloated countenance. The urine is secreted in diminished quantity. The œdema is general, not only throughout the connective tissue of the muscles, but throughout the connective tissue of solid and visceral organs in every cavity of the body. Effusion of serum into the serous cavities very generally precedes death.

Treatment.—Bleeding has been considered applicable to those cases where there is extreme difficulty of breathing and delirium, when the patient is robust, and when the œdema does not pit much on pressure, where there is rapid and full pulsation of the large arteries, and if the urine shows the existence of albumen (Wright); but, judging from the pathology of this disease, the constitutional influence of stimulants, of a generous strengthening diet, of tonics, diuretics and analeptics, ought undoubtedly to be the basis of

treatment. Should there be irritability of the stomach, an effervescing draught, with doses of laudanum and camphor mixture are useful. Saline drinks should be administered, and the extremities should be rubbed with stimulating liniments, and rolled in flannel bandages. In the asthenic or chronic form of the disease, the strength must be supported by the most nourishing diet that can be given in small bulk, aided by tonics, and wine if necessary; while doses of equal quantities of squill and digitalis (ten to fifteen drops of each) may be given twice or thrice daily. In the third and mildest form, a native remedy called Treeak Farook is very useful. The ingredients of this medicine are unknown; but it professes to be the "Theriaca Andromachi" of old writers. It is prepared in Venice, and transmitted to India through Arabia, and was first recommended by Dr. Herklotts, of the Madras Presidency, as a remedy in beri-beri. It is a thick extract (in which some terebinthine material largely enters), which is only to be procured from the Moghuls, and in those towns which still keep up some communication with the Arabian Sea. Many observers bear testimony to its good effects in removing the œdema and subduing the pulse (Wright, Traill, *Madras Quarterly Med. Jour.*, 1842, Vol. IV., p. 154, Geddes, Malcolmson). In some recorded cases the pulse has fallen in four days from 108 to 84 beats per minute under its use. The prescription most approved of consists of pills of the following ingredients:—

℞. Treeak Farook, ℥ ss.; Pulv. Rhei., ʒ iiss; Confectio. Aromat., ʒ ss.; Mellis, q. s., misce, et divide in pill xlviii. (Malcolmson).

The electuary form is also much used in India. The remedy does not seem to be an active medicine, except in combination. Four or five stools are obtained daily under its use, and its action is not accompanied by any violent purging, increase of pulse, or determination to the surface; and after it has been used from one to two weeks, the œdema generally disappears, when the numbness and paralysis subside. If it purges, the quantity of rhubarb must be diminished. The patient should feed on animal food, wheaten cakes, and milk. In instances where the native remedy has failed to produce a beneficial effect, nux vomica has been more successful, commencing with doses of two grains of the extract daily, and increasing the dose gradually according to the physiological result. The extract of nux vomica, in doses of half or a quarter of a grain, combined with

iron or gentian in a pill, is the most convenient form. Local abstractions of blood from the spine have also proved useful; and a blister applied over the loins has given relief in many obstinate cases. No single rule of treatment will apply in all cases. The anæmic condition must be counteracted on the principles of treatment explained under that disease; and any specially abnormal state, such as diseased heart, must be treated accordingly. When the disease prevailed very generally in the Carnatic, in 1782 and 1783, some cases were most successfully treated by a pill containing a quarter of a grain of extract of elaterium, combined with extract of gentian, given every hour until copious watery evacuations were procured; and this plan was repeated every third or fourth day, till with others this plan of treatment was not so successful; the cases recovering best under large doses of spirits of nitre, antimonial wine, frictions with warm camphorated oil, aperient medicines, wine, and a nourishing diet. Mr. Evezard's method of medicinal treatment consists mainly in the administration of acetate of potash in gin, in the following formula:—℞. Gin, ℥ ss.; Potass. Acet., gr. v.: Aquæ, ℥ iii.; misce. To be given three times a day. If vomiting persists, hydrocyanic acid may be useful in relieving it, to the extent of one drop three times a day, given in milk. In the experience of Dr. Paterson of Bahia, a trip to Europe (if not had recourse to too late) is a certain cure: and medicinally, his patients have derived marked benefit from a combination of ergotine, iron and extract of belladonna, in the form of a pill. Sea-bathing is also acknowledged to be of great service.

Bladder, Catarrh of—*See Cystitis.*

Brain, Inflammation and Suppuration of—*See Encephalitis.*

Brain, Tumors, Etc., of.—*Definition.*—New growths, parasites, and aneurisms, implicating the cerebral substance, the spinal cord or their membranes, or both.

Treatment.—Under such circumstances medicinal treatment can be only palliative; the patient may be protected as much as possible from hyperæmia of the brain aggravating the morbid state. His nutrition and mode of life must be regulated, and also the functions of the bowels. Apoplectic or local inflammatory attacks may be met by local bloodletting and cold compresses. Hypodermic injections of morphia are also to be used in suitable cases. If syphilis exists,

or is suspected, anti-syphilitic remedies are at once to be adopted.

Bright's Disease.—*Definition.*—A generic term, including several forms of acute and chronic disease of the kidney, associated with albumen in the urine, frequently with dropsy, and with various secondary or intercurrent affections, resulting from deterioration of the blood.

Treatment.—(*a.*) Of Acute Bright's Disease.—(1.) Relieve the kidneys as much as possible from the labor of elimination, by avoiding exposure to cold, by keeping the patient at rest in bed, in a room of moderate uniform temperature. (2.) The food should be scanty, consisting of gruel, arrowroot, milk, or weak broth. Pure water is the best drink, and alcoholic fluids are not to be taken on any account. (3.) Free action of the skin and bowels must be maintained. The hot air bath and antimonial remedies are the best agents to effect the first of these conditions, and free perspiration is to be encouraged by bedding the patient in blankets. Antimonial wine may be given in doses of from fifteen to thirty drops every four or five hours. The bowels are to be kept open by the compound jalap powder, in doses of twenty to sixty grains, repeated daily or on alternate days. It may be alternated with podophyllin or with extract of colocynth. Mercury is not to be given. (4.) Cupping over the loins relieves pain in the back, and the quantity of urine passed generally increases after eight or ten ounces of blood have been withdrawn in this way from an adult, or two or three ounces from a child three or four years old. (5.) When the tongue becomes clean and the general symptoms improve, mutton broth or good beef tea may be indulged in; and, as the digestion improves, solid food may be eaten in small quantities, beginning with fish and fowl, and afterwards mutton or beef. (6.) Flannel must be worn next the skin. (7.) Iron is of great service during convalescence, for in such cases the anæmia becomes extreme. Phosphate of iron, in the form of syrup, or citrate of iron and quinia, or the ferrum redactum, are the most digestible forms, and they ought to be given in small doses repeated after every diet. (8.) Diuretics are not to be given. In a case where the urine was suppressed, fomentations, consisting of infusion of the leaves of digitalis, were found by Christison and Vogel to increase enormously the amount of urine. Parkes found the amount of the albumen to diminish markedly from the use of the tincture of the sesquichloride of iron (l. c., p. 379).

(*b.*) Of Chronic Bright's Disease, general principles only can be indicated, inasmuch as every case requires a special study, and a line of treatment in detail peculiar to itself. Whatever treatment be adopted, a long time is necessary before any appreciable results are obtained. It is, therefore, necessary to persist in one line of treatment steadily from week to week, and even from month to month; and it is obviously of great importance to be as accurate as possible in diagnosis as to the probable state of the kidney, so as to define the line of treatment from the first which may seem best adapted for the individual case.

It is a question of grave importance how far vomiting or diarrhœa ought to be checked. If either of these occurrences are suddenly stopped, the gastric and intestinal membrane acting at the time as an emunctory for the urea and other excreta of the urine, the patient may be suddenly cut off by convulsions, apoplexy, or effusion into some of the serous cavities, such as the pericardium, or the pleuræ, or the ventricles of the brain. It is necessary, therefore, in the first instance, to determine in all chronic cases the particular organ or tissue which seems in each case to be acting vicariously. The perspirations are often spontaneously profuse; and the skin is by far the safest emunctory for the vicarious elimination of urinary constituents. Therefore it is important to promote the action of the skin if it be deficient, and to encourage it even if it is already considerable. Diaphoretics are always of essential service. The best are Dover's powder, the warm bath, warm clothing, and, for convalescents especially, a moderately warm climate. In Sir Robert Christison's experience diaphoretics have always appeared most serviceable when they are so given as to excite a gentle perspiration during a part of the night. So it is also safe to promote the discharge of secretions from the intestinal canal, with due caution that they do not become excessive, so as to pass into permanent diarrhœa. Urea and other constituents of the urine are found in such discharges in large proportions. When general anasarca prevails, absorption may be promoted by gentle pressure, which at all times must be very cautiously applied, and the effects closely watched, for such effusions afford great temporary relief to important symptoms which indicate the involvement of vital organs. Bandaging to promote absorption is not justifiable so long as the anasarca is increasing. Patients ought to be encouraged to go about as long as they are able, care being taken that they are clothed

with flannel and woolen garments, and otherwise well protected from chills or draughts of cold air.

In the subacute forms of the disease the action of the skin is especially to be promoted by such saline remedies as the acetate or citrate of ammonia, to which may be added one, two, or three drachms of the infusion of digitalis, and ten or fifteen minims of antimonial wine. In such cases, also, ten or fifteen minims of the tincture of the perchloride of iron, or from five to ten grains of the citrate of iron and ammonia may be given every day with one of the meals. Every second day a dose of the compound jalap powder may be given; and if hyperæmia of the kidneys prevail, it may be necessary to take from four to six ounces of blood from the loins by cupping or by leeches. As the urine becomes more free from blood corpucles and albumen, the iron medicines may be more frequently given, and the compound jalap powder less frequently. A good formula for the administration of salines and iron in the subacute and chronic cases is that given by Dr. Basham and Goodfellow, as follows:

Liquor Ammoniæ Acetatis, ℥ ii.; Acidi Acetici diluti, ℥ i.; Tinct. Ferri Perchloridi, ʒ iv.; Aquæ, ℥ iss.; misce. Two tea spoonfuls for a dose.

Small doses frequently repeated seem to do better than larger ones given at longer intervals. These remedies tend to lessen the watery state of the blood; and the action of the chalybeate medicines is of no avail till after purgation has been free, and when the hot air or warm baths have caused the skin to act freely. A nutritious diet is then to be given, combined with the chalybeate remedy.

The quantity of urea passed by the urine should be determined day by day, to ascertain how far the kidneys are capable of secreting and eliminating these excrementitious products. According to the results obtained the diet must be regulated, and such measures taken as are calculated to reduce the quantity of urea, and other constituents formed daily, to the capacity of the diseased kidneys for the work they are able to do.

The further treatment of the chronic forms of Bright's disease is influenced by the amount of the anasarca present. If considerable anasarca is present, neither cupping nor leeches can be had recourse to, on account of the bruising and erysipelatous inflammation they are apt to induce. The chalybeate mixture already mentioned is still found of service, taken at least three times daily, and to it may be added

from time to time fifteen or twenty minims of the spiritus ætherus nitrici (Goodfellow). The citrate of iron and ammonia, in from five to ten grain doses, with the sulphuric or chloric ether, are also good and useful remedies; and if the iron medicines are found too stimulating, sulphate of zinc, or tannic and gallic acids, may be used instead. The sulphate of zinc is to be given, in doses of one to three grains three times a day, in the form of a pill, made with extract of hop, and with or without a grain of the extract of nux vomica; or the same dose of sulphate of zinc may be given in a draught combined with sulphuric or chloric ether (Goodfellow). These latter medicines relieve considerably the flatulence and sensation of coldness in the stomach and bowels, so much complained of in such cases.

If the urine is "smoky," or if blood is seen on microscopic examination, the gallic acid, in five or ten grain doses, may be given, with a few drops of diluted sulphuric acid and a few drops of the tincture of hops, or other aromatic vegetable tincture, in an infusion of the same. The objection to these remedies is the constipation they are apt to induce. The bowels should always be kept relaxed, two or three loose evacuations being secured daily. The medicine most generally useful is the compound jalap powder of the London Pharmacopœia, which should be taken in the morning fasting, in half drachm or drachm doses, in a wine-glass of water. It does not induce prostration, but by repetition it is apt to lose its effect, when elaterium may be necessary in small but repeated doses; two grains of elaterium being dissolved in sulphuric ether, and the eighth of a grain given every six hours till the desired effect is produced. Very abundant watery purgation is thus obtained, and a sensible impression is made upon the distended dropsical parts (Basham). If elaterium may not be deemed advisable, a saline draught of the following composition may prove efficient:

℞. Magnes. Sulph. vel Sodæ Sulph., ʒ i. to ʒ ij.; Ætheris Sulph., m x.; Acid. Sulph. dil., m x.; Ferri Sulph., gr. i. to ii.; Aq. Menthæ Vir., ℥ iii. to ℥ iv.

This draught is to be taken the first thing in the morning once or twice a week. It ought to produce two or three loose and watery evacuations (Goodfellow).

Diuretics are a most certain and speedy remedy when the dropsical effusions are considerable; and they are sometimes advisable when the urine is scanty, although they are seldom necessary in the treatment of the fundamental disease. Sir

Robert Christison is convinced that the fears entertained by some of injury being produced by the stimulus of diuretics on the kidneys are visionary. In his experience, over more than forty years, the best diuretics are digitalis, squill, and bitartrate of potash, taken simultaneously; and, if these fail, Hollands spirits sometimes speedily establishes the diuresis.

When dyspeptic spmptoms predominate, and there is considerable flatulence, the following pill is recommended byDr. Goodfellow to be taken twice or thrice daily:

℞. Ferri Sulphatis, gr. i.; Ext. Nucis Vomicæ, gr. ½ to i.; Mas. Pil. Galb. Co., gr. ii. to iii.; misce, fiat pilula.

And if there be co-existent bronchitis, a draught of the acetate of ammonia, with ten, fifteen or twenty drops of the spiritus ætheris nitrici, and half a drachm of the oxymel of squills, is to be taken intermediately with the pills. If much nausea prevail three minims of dilute hydrocyanic acid may be added to the draught, with occasional application of mustard to the stomach.

Want of sleep is often complained of, but opiates are inadvisable, because they are apt to check the secretions and to occasion constipation. Henbane may be given in place of opium.

The patient should select a residence where the soil is sandy or chalky, where the air is mild and dry, so that as much open-air exercise may be taken as possible.

Diet should be light, but nutritious; no pastry should be eaten; and stimulant liquors should be used with caution, although, when exhaustion is great, their use may be unavoidaeable. The principal meal should be in the middle of the day, but not later than three o'clock; and the last meal should be taken two or three hours before bedtime, retiring early to bed, and rising early. Light but warm woolen clothing is to be always worn—in summer as well as in winter.

The complications of Bright' s disease are extremely difficult to manage. The diarrhœa must not be suddenly checked. Thirty to sixty minims in water of the spiritus ammoniæ aromaticus, with half a drachm of the tincture of kino or of catechu, after every loose stool, will in general be all that is necessary. If there be much griping, the application of a linseed poultice over the abdomen, with two drachms or half an ounce of tincture of opium sprinkled over it, will give relief (Goodfellow). When it is found necessary to use measures for checking the diarrhœa, means should be taken that the skin acts freely, or that the urine

flows increased in quantity. Lead and opium pill (pilula plumbi cum opio), in doses of five or ten grains twice or even thrice a day, is the best remedy for checking diarrhœa. These remedies may be aided by a suppository of the hydrochlorate of morphia occasionally, each suppository containing a quarter of a grain of the hydochlorate of morphia (morphiæ hydrochlor. suppositoriæ). Vomiting may be controlled to some extent by bismuth, but more frequently by morphia, hydrocyanic acid, creasote, rectified pyroxylic spirit, chloroform, or chlorodyne, or little fragments of ice; and if these fail, a blister over the epigastrium has sometimes succeeded (Sir Robert Christison).

Intercurrent inflammatory attacks and effusions into cavities are still more difficult complications to manage. The application of a few leeches, or the abstraction of a few ounces of blood by cupping, may be borne well in cases with head complications; but the greatest care and caution are required in the employment of similar remedies in the complication of pericarditis, on account of the great danger of death by syncope.

Bronchial complication are serious, and more or less constantly present. They are frequently the immediate cause of death in chronic Bright's disease. The least stimulating expectorants may be administered under such circumstances. The following formula is recommended by Dr. Goodfellow:

℞. Liquor Ammoniæ Acetatis, ʒ ii. to ʒ iii.; Spiritus Œtheris Nitrici, mxx. to ʒ ss.; Oxymellis Scillæ (Lond.), ʒ ss.; Aquæ Camphoræ et Aquæ aa ʒ v.; misce, fiat haustus. To be taken every four, six, or eight hours.

If the expectoration be viscid and difficult to discharge, a few drops of antimonial wine may be added to the draught; or if there be much spasm of the bronchial tubes, as indicated by the asthmatic breathing, a few drops of sulphuric or chloric ether may be given. If, on the other hand, the expectoration be purulent and difficult, a few grains of carbonate of ammonia may be given with the oxymel of squills. Every precaution ought to be taken to prevent a fresh attack of bronchitis. So long as the patient is able to bear it, the habit of cold sponging and dry rubbing of the surface of the body every morning with a flesh brush or coarse towel is the best preventive, and being clad in warm woolen clothes. Flannel next to the skin must be invariably insisted on.

Mercurial preparations are contraindicated in Bright's disease—so great is the tendency to salivation and the otherwise

injurious effects they produce. Podophyllin (the active principle of the May apple) may be used instead. Its dose is from ¼ to 1 grain; and it ought not to be given in doses larger than one grain. It is best given in a fluid form (see p. 902, ante), or a pill with soap and hyoscyamus. As an occasional mild aperient pill, the following is found to answer well:

℞. Mas. Pil. Rhei. Comp., gr. ii. to iii.; Vel. Ext. Aloes, Aquosi, gr. i.; Ext. Nucis Vomicæ, gr. i.; Mas Pil. Galb. Co., gr. ii.; misce. fiat pilula (Goodfellow).

Bronchial Catarrh.—*Definition.*—Infiltration and œdema of the mucous membrane of the bronchial tubes, so that tumefaction diminishes their calibre, attended first with dryness of surface, followed by a watery secretion, which subsequently becomes turbid and yellow. The disease is sometimes attended with chilliness and the discomfort of what is called a "common cold."

Treatment.—When the symptoms of a "common cold" first express themselves, when the attack is sudden, attended with marked depression, aching pains in the head, back, and limbs, and febrile disturbance (and even when the sensations have extended to the chest, as indicated by the hoarseness and tendency to cough), the disease may be at once subdued in a healthy person by a full stimulant (but not narcotic) dose of opium or morphia. "One-third or one-fourth of a grain of muriate of morphia, or one grain of opium, ought to be taken at bedtime. Its influence will begin to be felt in from twenty minutes to half an hour, by the gradual disappearance of the sense of intense weakness, the relief of the pains, and that peculiar feeling of thorough and evenly distributed warmth of the whole body which is so different from fever on the one hand, or chilliness on the other" (Anstie, op. cit., p. 120.) An alcoholic diaphoretic drink; or five grains of carbonate of ammonia, or ten to twenty grains of muriate of ammonia; or, if the appetite is unimpaired, a full supper, followed by a hot alcoholic stimulant, may have a similar effect to opium. Natural sleep ought to supervene, and the morning ought to find the patient well. The following formula has been recommended as an anticatarrhal olfactory, originally prescribed by Dr. Hagner; ℞ Carbolic acid, 5 parts; rectified spirit of wine, 15 parts; strong solution of ammonia, 5 parts; distilled water, 10 parts. The mixture is kept in a stoppered dark glass bottle. When a catarrh is commencing, a few drops are placed on three or four layers of blotting or filtering paper; the patient holding this in his

hand, and closing his eyes, inhales deeply from it as long as any smell is perceptible. The effect is to cut short the acute stage of the cold, to prevent the occurrence of subsequent coryza and bronchial and laryngeal catarrh; while all troublesome symptoms are rendered much milder. The remedy should be applied every two hours (Dr. E. Brand, *Wiener Med. Wochenschrift*, June 15, 1872). Snuffs composed of morphia and subnitrate of bismuth are also found useful when coryza is present—e. g., muriate of morphia, gr. i.; powdered gum arabic, ʒ i.; subnitrate of bismuth, ʒ iii.; and oxide of zinc may be added in the proportion of 40 grains. This compound powder is to be repeatedly and thoroughly snuffed into the nostrils.

If such remedies are delayed too long, the object next to aim at is to induce a copious perspiration and a continued action of the skin and kidneys, by small doses, frequently repeated, of antimonial and ipecacuanha wines, or nitrate of potash, or acetate of potash, as well as bicarbonate of potash and aqua potassæ, combined at a later period with tinctures of squills and hyoscyamus. In the early stage of the disease the bronchial membrane has its normal moist condition altered to a dry state; and the object of treatment is to bring about a return of the naturally moist condition. This is best effected by the inhalation of the vapor of hot water, the use of tartar emetic in doses of one-twelfth to one-sixth of a grain, the use of ipecacuanha in one-quarter or half-grain doses. From the frequent inhalation of steam great benefit is derived. Opium has often been regarded as hurtful in the first stage, because it has been taught that it interferes with the free secretion of mucus; so as to render expectoration difficult. But the onset of the catarrh—i. e., free expectoration, is in consequence of the abatement of the inflammation, which opium tends to subdue, and in this respect it acts as an expectorant. Thus it is often of great service in the first stage of a common cold, as it is in most acute inflammations (Flint.) The inhalation of iodine vapor every three or four minutes for an hour is of service, each inhalation lasting one minute, by merely holding a bottle of tincture of iodine in the warm hand under the nose (Tanner.) Total abstinence from liquids for forty-eight hours, originally recommended by Dr. Richard Lower, one hundred and forty years ago, is a practice recently revived by Dr. C. J. B. Williams. Muriate of ammonia, ʒ ss. in solution, is a remedy also much in use, combined with liquorice or simple syrup, with one grain

of tartar emetic and one or two drachms of antimonial wine, dissolved in six or eight ounces of water. Of this a tablespoonful for a dose, frequently repeated, may induce relief, when the discharge from the nose and trachea is viscid. Copious warm drinks and abundant warm bed-clothing, to induce diaphoresis, are efficient remedies to be used early.

The object aimed at in the treatment of a "common cold" is to establish a free catarrh—to soften the expectoration and make coughing "loose" and easy. Niemeyer lays down some practical rules, based on symptomatic indications, to accomplish these ends :—(1.) In chronic colds or catarrhs, where cough is incessant and distressing, and out of proportion to the expectoration, narcotics are indicated—such as ten grains of Dover's powder at bed-time, or the camphorated tincture of opium (paregoric elixir). External counter-irritants are also of service, in the form of mustard poultice, "mustard leaves," or blistering substances, short of vesication, such as stimulating liniments. Chlorate of potass is also a useful remedy. (2.) Dyspnœa, with extensive sibillant rhonchus and irritability of the mucous membrane, are also relieved by narcotics, combined with ipecacuanha, or with tartar emetic. But narcotics are contraindicated if, owing to the feebleness of the patient, the efforts of expectoration are inadequate to prevent accumulation in the bronchial tubes. Alkaline carbonates possess the property of thinning and rendering easier of expectoration the viscid bronchial secretion, and are on that account to be recommended, especially where the condition of the urine suggests such remedies. Opium in its many forms is the most useful remedy, so long as the first stage of inflammation exists, if care be taken to watch that nothing contraindicates its administration. Preparations of conium, hyoscyamus, or hydrocyanic acid, must be used in cases where opium is contraindicated.

(3.) When secretion is profuse, with relaxation of the mucous membrane of the bronchi, when large, soft, moist rales are heard, stimulant expectorants are indicated,—senega, squills, carbonate of ammonia, benzoin, gum ammoniac, and oil of cubebs. Remedies in the form of gas are also of service, such as the fumes of tar, by boiling it alone or mixed with water; also vapor of turpentine, half a drachm being put into a bottle of hot water, the patient inhaling for a quarter of an hour, four times a day. In all cases absolute rest, vegetable diet, demulcent drinks, and small doses of antimonials will greatly tend to bring about relief. A pint of any demul-

cent fluid (such as linseed tea), with two drachms of antimonial wine, taken in small quantities, so as to be consumed in twenty-four hours, will be found a good standard prescription. Gum arabic, in the proportion of one ounce to the pint of water, or decoction of marsh mallow, or of dried fruits, is a good substitute for the linseed, and may be flavored with anything agreeable to the taste of the patient, such as orange or lemon syrup. If much fever exists, a very hot foot-bath, just before going to bed, has a soothing effect. The air of the bed-room must be kept at about 60° Fahr., not below, and the patient must remain as quiet as possible.

Generally, in prescribing cough mixtures, which ought if possible to be avoided (seeing that they so impair the functions of the stomach), the following conditions ought to be adhered to in devising the mixture:—(1.) That the prescription should be in the form of fluid remedies,—solution, or infusion of wines or syrups of the drugs. (2) That the dose should not exceed one teaspoonful. (3) That the proportions contained in the mixture should be so arranged that a dose may be given every two, three, four, or six hours, according to the urgency and acuteness of the symptoms. Such a mixture may contain in each dose, for an adult, from ten to thirty minims of antimonial wine, or of ipecacuanha wine, or of tincture of sanguinario, or of syrup of squills, or of vinegar of squills, with two minims to four minims of hydrocyanic acid, or thirty to sixty minims of tincture of hyoscyamus or of conium; or from two to four minims of tincture of opium; or from thirty to sixty minims of camphorated tincture of opium.

Bronchitis.—*Definition.*—Inflammation of the air-passages leading to the pulmonary vesicles, characterized by hoarseness, moderate cough, heat, and soreness of the chest anteriorly—symptoms which are more and more intense according to the severity of the disease, and especially the extensive implication of the smaller tubes. The natural mucous secretion is at first arrested, but subsequently it becomes increased in amount and altered in quality, tending to assume the corpuscular character.

Treatment.—(*a.*) In acute bronchitis.—General bleeding uniformly weakens the patient. In severe cases of acute bronchitis some blood may be taken from the chest, with great caution not to take too much, either by cupping between the shoulders or by leeches, and in general from ten to twelve ounces are sufficient. It is only in extensive conges-

tion of venous circulation threatening asphyxia, that general blood-letting is imperative. Next to blood-letting, tartarized antimony, administered in solution in doses of a sixth or a quarter of a grain, every three or four hours, conduces to free secretion, and generally to mitigate the symptoms of the disease. Digitalis is a useful adjunct to the antimonial treatment. When the expectoration becomes thicker and less copious, the antimony may be decreased, and squills, or ipecacuanha, with paregoric, given. After this a blister should be applied to the chest; and on its removal a large linseed poultice should be placed near the blistered part, and continued for many hours. The bowels should be freely evacuated by a purgative dose of calomel, combined with compound jalap powder, and they should subsequently be kept in regular and gentle action by some neutral salt, such as sulphate of magnesia in the liquor ammoniæ acetatis, combined at the same time with some nitrate of potass. The neutral citrates, tartrates, or acetates of the alkalies are useful eliminating remedies.

After the severe symptoms at the outset have been subdued, expectoration should be promoted by squills, ipecacuanha, and tartar emetic, combined with hyoscyamus or conium. Opium in narcotic doses (*i. e.*, above a grain) is inadmissible, because its tendency is to paralyze the action of the mucous passages in eliminating secretion. After secretion has begun to diminish, in acute cases opium may be prescribed with benefit in stimulant doses, in the form of solution of the salts of morphia, added at bedtime to the doses of the cough mixtures so usually administered. (See under Bronchial Catarrh.) If the disease shows a disposition to pass into the chronic stage, quinine, with squills and conium, may be administered, or a draught containing full doses of cinchona, with five grains of carbonate of ammonia, or ten to twenty grains of the muriate of ammonia, and thirty or forty minims of the compound tincture of benzoin (Friar's balsam), or of the balsam of Peru, will generally facilitate expectoration and relieve the dyspnœa. If a "hearty cough" is not attended by easy and free expectoration, but the chest remains loaded, stimulant expectorants may be given in aid of other remedies, such as the decoction of senega, or the mistura ammoniaci (Fuller). The patient throughout the treatment should remain in a room where the air is kept moist by the evaporation of boiling water from large flat dishes near the bed, and the temperature of the air should be maintained at

63° to 68° Fahr. Alike in acute and in chronic cases, iodide of potassium is of great service. It has a marked effect in reducing the frequency of the respirations. It is best prescribed with carbonate of ammonia, and if cough is very troublesome, tincture of belladonna and ipecacuanha wine may be added.

(*b.*) In chronic bronchitis, especially in patients who have made considerable progress in the journey of life, a lower tone of the system prevails. A greater laxity of aërian membrane—particularly with excessive secretion, often muco-purulent—characterizes them; and after blistering and poulticing the chest repeatedly with linseed and mustard poultices, the treatment in general should be more tonic. The camphorated mixture or paregoric and stimulant expectorant remedies are indicated for occasional, but not for constant use. Stimulating embrocations may be rubbed not only over the chest, both before and behind, but along the sides of the neck.

A liniment composed of the following ingredients was extensively employed by the late Drs. Graves and Stokes in the Meath Hospital, Dublin:—

℞. Spt. Terbinthinæ, ℥ iii.; Acid. Acet. ʒ iv.; Vitelli Ovi, i.; Aq. Rosæ, ℥ iiss.; Ol. Limon., ʒ i.; misce.

It is to be applied as a rubefacient, morning and evening, when it generally reddens the skin and produces small pimples. In several cases the secretion of the kidneys is increased during its use (Maclachlan). Of tonic remedies most reliance may be placed on the influence of nux vomica, iron, and quinine, in the form of a syrup composed of the phosphates of strychnia, of iron, and of quinia; so that, in doses of a teaspoonful three times a day, each dose shall contain the thirty-second part of a grain of phosphate of strychnia, and one grain respectively of the phosphates of iron and quinia. (Formula for the preparation of this compound, see "Anæmia.") The inhalation of slightly irritant vapors has a beneficial effect, as of vinegar, turpentine, chlorine and iodine. Of the fetid gums, ammoniac in particular is a useful remedy. An emulsion of gum ammoniac in diluted nitric acid, is a combination from which beneficial results are obtained. The following is a formula for its prescription—namely, an hundred and twenty grains of the gum ammoniac dissolved in two fluid drachms of diluted nitric acid and twelve ounces of water, compose a mixture of which an ounce may be given in gruel or barley-water three times a day

(Easton, *Glasgow Med. Jour*, Oct. 1, 1863). It may also be advantageous to administer astringent remedies, and one of the most useful is tannic acid, in doses of one to three grains two or three times a day; or the oil of cubebs to the extent of ten drops three or four times a day on a piece of sugar (see under treatment of "Phthisis").

Acute bronchitis is apt to be latent in old people, and to be complicated with gastric or gastro-enteric inflammation (Maclachlan). The stimulants of food (by enema in the form of soup, without salt, if unable to be taken by the mouth) and of alcohol are the main remedies necessary from the very beginning. Abstinence cannot be enforced with safety. Leeches must be applied to the pained gastric region. When the disease is associated with a tendency to gout, colchicum must be given. "It allays the cough, promotes the flow of urine, keeps up a regular alvine discharge, and can be given much more generally than squills, because it does not produce that feverishness which results from the use of the latter remedy, and can therefore be employed where there is considerable fever" (Forbes). It requires to be administered with great caution in the aged and infirm (Maclachlan). In the protracted bronchitic affections of the aged, diuretics are of great service. The following formulæ are recommended by Drs. Maclachlan and Stokes.

℞. Decocti Senegæ, f 3 vij.; Potassæ Nitratis, gr. iii.; Tinct. Camph. Comp. vel Tinct. Conii, m xx.; Spiriti Ætheris Nitr., f 3 ss., Oxymellis Scillæ, f 3 ss. Fiat haustus ter die summendus (Maclachlan).

℞. Liq. Ammon. Acet., 3 iii.; Potassæ Acetatis, gr. xx.; Aceti Scillæ, f 3 ss.; Spirit. Æth. Nitr., f 3 ss.; Tinct. Camph. Co., m xx.; Mist. Camph., 3 vi.; Syrupi Aurant., 3 i. (Maclachlan). Fiat haustus ter die summendus.

℞. Decocti Senegæ, ℥ v.; Tinct. Camph. Co. Tinct. Scillæ, a a 3 ii.; Syrupi Tolut., 3 iv. Sumat ℥ ss. vel. 3 i. ter die (Stokes, Maclachlan).

When gastric irritation prevails, the administration of balsams, gum resins, and terebinthine remedies must be suspended.

(*c.*) In capillary bronchitis the treatment must be strictly conservative; spoliative remedies lessen, if they do not destroy, the chances of recovery. The tendency to death is by apnœa, from the imperfect oxygenation of the blood—the area of available respiratory surface being greatly diminished, both from the morbid state of the minute bronchi and

the accumulation of diseased products in them. The patient must be properly and adequately nourished. Stimulants are often required, and tonics should be early administered. The chest must be covered with hot poultices, and an oil-silk jacket worn over them. Dry-cupping has seemed to give relief to urgent symptoms. The muriate of ammonia —two grains every two hours—either alone or in combination with the chlorate of potash: and the carbonate of ammonia has long had a certain reputation in capillary bronchitis, especially in the later stages.

(*d.*) In bronchiectasis opiates are required to relieve cough; balsamic remedies (tolu, tar, benzoin, turpentine, copaiba, cubebs) and astringents, like catechu or rhatany, with the use of counter-irritants and the inhalation of variously medicated vapors, are all useful aids in ameliorating the condition of the patient. Muriate of ammonia and the alkalies are also to be recommended. Inhalation of disinfectants, capable of being so used, such as creosote, carbolic acid, sulphur vapor, turpentine, and the like, are of special service (see under treatment of "Phthisis").

(*e.*) Plastic Bronchitis.—In the acute form, muriate of ammonia and the alkalies and iodide of potassium may be given, with an occasional emetic, and inhalation of the vapor of hot water. The patient should be carefully protected against damp and sudden changes of weather.

Bronchocele—*See Goitre.*

Bronchocele, Exophthalmic—*See Goitre, Exohpthalmic.*

Cancer.—*Definition.*—A growth consisting of a delicate fibroid stroma, containing within its meshes aggregated but not coherent cell-elements—cells, nuclei, or granules—generally UN-uniform, though often similar to natural cell-elements. It tends not only to spread continuously irrespective of the tissue invaded, and to multiply its elements indefinitely, and so to infiltrate into the surrounding structures, especially in the course of the lymphatics and nerve sheaths of the part affected; but it also tends to infect or reproduce itself in more remote and internal parts of the body; and finally, it tends to progressive softening and ulceration, with ultimate poisoning and exhaustion of the system. It is in this dynamical specific force of growth, spread, infectiveness, and multiplication, that the "malignancy" of "cancer" is expressed; and by virtue of which it is a disease *sui generis.*

Treatment.—No remedy has yet been found which can in

any degree be considered curative of the constitutional state associated with cancer, and the efforts of the practitioner are consequently limited to relieving symptoms, and to the adoption of such palliative measures as may prolong life. It has generally been believed that to remove a cancerous growth where it is practicable must, on theoretical grounds merely, be attended with as much benefit to the constitutional disease as would attend the removal of a leg for acute rheumatism chiefly expressed in the knee-joint. The statistics of cancer show, so far as they go, and as Dr. Walshe long ago showed, that "excision of a cancerous tumor seems to awaken a dormant force. Cancers spring up in all directions, and enlarge with a power of vegetation almost incredible." Nevertheless, there are good reasons for removing cancers in some cases, especially mammary cases and others accessible to the knife. The greatest measure of good may be done, as Sir James Paget has clearly shown, "by making a careful selection of cases fit for operation, and rejecting all the rest as unsuited for operation" (*Med. Times and Gazette*, September 27, 1872, p. 319). With regard to excision of the breast for cancer, the main objection in the first instance is, that even of cases selected with some care, 10 per cent. (Paget) to 16 per cent. (Lebert) die of pyæmia, or erysipelas, or tetanus, or secondary hæmorrhage, or some calamity subsequent to the operation. On the whole, however, taking the results of some hundreds of cases, it is certain that the average duration of life of those operated on is not less than those in whom the disease runs its course. In well-selected cases it will be found always greater. A recent tabulation of hospital and private cases by Sir James Paget showed that 85 cases operated on lived an average of 55.6 months; and 62 cases not operated on lived an average of three months. It has also been said that the recurrent disease is more painful than the primary one; but in very many cases Sir James Paget has found that the recurrent disease was much less severe than the continued disease. Considering, therefore, the danger of the operation, and the fact that in every case a recurrence of the disease may be expected, it is reasonable to submit a patient to the risk of dying from the primary operation for the sake of that interval of health between the operation and the recurrence of the disease, for the good probability of adding a year to life, and for the chance of having a less severe disease? The average length of the interval before recurrence is little more than thirteen months: more than half return within twelve months: and

two-fifths return within six months. The extremes between which the average is drawn are very wide. In some cases the return may be within three months; in others not for ten, twelve, or more years. It is of great importance to determine in what cases the risk of life is greater; and in what cases the probability of a speedy return of the disease is greater than the average. The old after sixty; the very large-breasted in cases of mammary cancer; the fat and plethoric; the cachectic; the over-fed on animal food; the drunkards; the gouty; the habitually bronchitic; the albuminurious; the very dejected—not timid merely; in short, those with any organic disease of the internal organs—all such cases are "doubly hazardous" to interfere with by operation (Paget.)

The probability of rapid recurrence is great in acute cancers—*i. e.* all those that are rapid in their progress—and in those which are observed to increase very quickly before the operation. Great pain, however, is often saved by performing the operation even under such circumstances. In illustration, Sir James Paget records the case of a lady "whose breast he removed when she was five months advanced in pregnancy. She recovered well from the operation, and the benefit procured by its performance was very great. She went to her full term, bore her child, and was able to suckle it for a year before she died, with her most anxious wish fulfilled in comparative comfort." Another condition unfavorable to operation is a brawny skin, with firm œdema and wide-open hair follicles or wide adhesion of skin, or in which the skin is cancerous, or where there are scattered tubercles of cancer in the glands and skin; or where there is considerable affection of the lymph-glands in the vicinity, and especially numerous diseased glands. A moderate amount of lymphatic disease is not a serious obstacle to an operation (Sir James Paget). In very chronic cases the operation is needless—where the breast is small, shrivelled, knotty, and sunk down on the pectoral muscle. By thus selecting with care, on the one hand, cases fit for operation, and refusing to interfere in those cases in which the operation would be attended with more than a proper share of danger, Sir James Paget believes that the life of a large number of those who suffer from cancer may be considerably prolonged. In whatever part the disease may be situated, one great rule is to endeavor to restore the healthy functions of that part, and to alleviate by opiates, chloroform, or chlorodyne internally, the distressing pains the patient endures. These remedies are for a time successful,

but make no impression on the disease, which silently proceeds, and the patient finally limits himself altogether to opiates. The quantity of opium or other narcotic known to have been taken in such cases is something enormous—five, ten, fifteen, or twenty grains of opium at a dose, or a proportionate quantity of hyoscyamos or of conium, three, four, or more times in the twenty-four hours. But although these large doses have occasionally been given, yet it may be questioned whether they are not more hurtful than beneficial; for usually they produce headache, delirium, loss of appetite, and narcotism, so that the patient is only the more rapidly exhausted. In general, therefore, the patient does better under moderate doses of opiates, as one or two grains, or its equivalent of morphine or other narcotic, every four, six, or eight hours, than when more excessive doses are given—a larger dose producing headache and much cerebral disturbance, without in any sensible degree mitigating the sufferings. When the disease is seated in the colon or intestine, the tumor is in general difficult to make out. One loop of intestine may open into another; and death by hæmorrhage may terminate the case. The symptoms vary greatly according to the position of the cancer and the part of the intestinal canal affected. Great sickness and vomiting generally attend cancer in the duodenum. When the stomach is so irritable that it rejects everything, it is our duty to support the patient by nutritive injections, as of strong broth, egg-flip, sago, or other fluid substances. It has been attempted to impart strength to the patient by means of milk baths, or baths of strong broths; but the skin has not generally sufficient power of absorption, and it has been found that the heat of the bath has exhausted the patient in a far greater ratio than its nutriment supported him. As a general principle, diet has little or no influence over the course of the disease when once established, except it may be that total abstinence from nitrogenous food may starve out the growth, and most likely also the patient; so that whatever agrees with the patient's digestion may be safely indulged in. Preventive treatment must be directed to the infant life of those who are hereditarily predisposed.

Cancrum Oris.—*Definition.*—The more severe form of inflammation of the mouth.

Treatment.—The disease is analogous to hospital gangrene, and an early recognition of its nature will suggest an efficient

application of strong nitric acid to the slough. The mouth must be frequently syringed with a solution of carbolic acid, in the proportion of half a drachm dissolved in a gallon of boiling water, and allowed to become warm or tepid.

Tonics and antiseptics must be freely given. Beef-tea, wine, brandy, quinine, and chlorate of potash are also indicated.

Carcinoma—*See Cancer.*

Catalepsy.—*Definition.*—A sudden suppression of consciousness; but instead of falling down convulsed, as in hysteria, the patients maintain the position in which they were when the attack commenced. The limbs and trunk persist in a state of balanced muscular contractions; the same expression of countenance is preserved which may chance to be at the moment of seizure. If sitting, the patient continues to sit; if standing, he continues to stand; if occupied in any mechanical employment, he continues fixed in one attitude; and if he is under the influence of any passion, the countenance retains its expression.

Treatment.—No constant line of treatment can be stated. The individual case must be judged of upon its own merits, and prescribed for according to the principles which have guided the dictates of treatment in the allied nervous affections.

Catarrh, Epidemic—*See Influenza.*

Cephalalgia—*See Headache.*

Cerebro-Spinal Fever—*See Cerebro-Spinal Meningitis.*

Cerebro-Spinal Meningitis.—*Definition.*—A fever believed to be of an acute specific character, of sudden invasion, attended by painful contraction of the muscles of the neck and retraction of the head. In certain epidemics it has been accompanied by a profuse purpuric eruption; and, occasionally, by secondary effusions into certain joints. Lesions of the brain, the spinal cord, and their membranes, are found on dissection. The course of epidemic cerebro-spinal fever is rapid, attended with great prostration of the powers of life, severe headache, and pain along the spine. The variations of temperature are so great that no typical range can be given; and the result is generally fatal.

Treatment.—At the outset, stimulating embrocations to the spine and extremities with moist or dry heat to the

limbs, and wrapping in blankets, give some relief. Opium in large doses is the only drug which has appeared to be of any service in subduing the virulence of the symptoms. Quinine, in cases where malaria aggravates the disorder, is also well spoken of. Ether and chloroform inhalation have been of use as sedatives; and tincture of cantharides has been of service in cases marked by extreme depression. Counter-irritation, by the actual cautery applied along the spine, or by blisters, has been followed by alleviation of the pain and other symptoms. The energetic use of cold, as of ice compresses to the head, of leeches behind the ears, and of calomel, as in sporadic meningitis, are measures to be recommended.

Cheloid.—*Definition.*—A tuberculated growth or swelling of the true skin occurring spontaneously or upon a cicatrix.

Treatment is not yet defined; but the history of the disease points to cold applications and tonic remedies as the basis of a rational treatment.

Chicken-Pox.—*Definition.*—A disease the result of a specific cantagium capable of inoculation, and having a period of incubation of eleven days (Murchison and Squire); it consists of a specific eruption, in a series of new crops, usually appearing for several days in succession; so that dried and fresh vesicles are often alongside of each other, on the breast, back, face, and extremities, preceded by fever. The disease may be protracted for a fortnight or longer, and may be epidemic. It affects the system only once.

Treatment consists simply in abstinence from animal food; having recourse to a milk diet; and careful attention to the bowels by saline luxations if necessary. The patient is to be kept at perfect rest and cool, by making him repose on a mattress rather than on a feather bed, with light coverings. It is necessary to be on the lookout against catarrh.

Chlorosis.—*Definition.*—A deficiency of the blood-cells with redundancy of the serous part of the blood, occurring in young girls at the age of puberty; in the young of both sexes before the complete development of the distinctive characters of the sexes towards puberty; and sometimes during pregnancy.

Treatment is chiefly conducted by change of air and diet, by moral and physical hygiene, and by medicines. All the functions of the body must be carefully observed and regu-

lated. The residence of the patient must be a reputed healthy spot, in the pure air of the country, rather than the town. Dry frictions of the back and limbs are also recommended, with bathing in the sea, where it can be borne. The food must be regulated so as not to be too stimulating nor disgustingly bland; frequent change is demanded, with a due attention to the proper apportioning of nutritive and respiratory elements. The diet should be generous, and carefully apportioned to the powers of digestion. Any symptoms of dyspeptic oppression, impaired digestion, or offensive stools, demand a careful readjustment of the dietary. Three meals, or perhaps four may be taken during the day—the intervals between the meals being equal; and, half an hour before each of the meals, two grains of capsicum, with one grain of quinine, may be given in a pill. The breakfast should consist of biscuit, dry toast, or stale bread, with fresh butter, and perhaps an egg, and one small cupful—not more—of hot black tea. Five or six hours after breakfast, and half-an-hour after the pill, a dinner of well-done meat, such as mutton chops, may be eaten with potatoes—beef-tea, or milk being taken for drink, according to taste and the powers of digestion. The evening meal may be similar to the morning. At first there may be a loathing of all kinds of food in the form of regular or "ordinary diets." In such cases no meals should be prescribed, and no solid food; but a cup of milk, with a third part of lime-water in it, may be given every two hours, prescribed as a medicine; and a pint of beef-tea in divided doses may be taken as a drink during the day. This diet may be gradually added to as the appetite improves. Trousseau observes that "there are some chlorotic girls who would rather die from inanition than eat ordinary food. We should not hesitate in such cases to make those therapeutic concessions which we are so often obliged to submit to in the practice of our art. I allow alimentary substances acknowledged to be very indigestible—caring not for the kind of food so long as it is eaten—as radishes, salads, fruits hardly ripe, highly seasoned sausage meat, old cheese, vegetables, meats prepared with vinegar, acid drinks, and the like. All I require in this whimsical diet is, that there be sufficient variety. By such means we often succeed in rousing the digestive functions, bringing back the sensation of hunger, and gradually leading the patient to proper food." Lebert insists on the importance of artificial feeding in some cases. A mixed diet is essential.

Change of air and bathing will also greatly aid in restoring health. If the patient lives in a town, she ought to be sent into the country; and, best of all, to the seaside, where sea-bathing may be prescribed, if the strength of the patient is sufficient. Should the patient have been living in the country, a change of air and scene to a lively town, with cheerful society; and, sometimes a little good wine with the food, will be no less useful as remedial agents. The much-be-quacked use of water, in its varied modes of appliance to particular cases, will be found a powerful restorative agent, if judiciously used by the patient under medical advice.

Of medicines, the preparations of iron have most reputation. They seem to act by promoting the formation of the red blood-corpuscles; and they operate best in those cases in which the blood is rich in albumen. They also act as stimulants to digestion; and it is not altogether immaterial which of the numerous officinal preparations of iron are to be prescribed. Almost every physician has some preparation of iron he fancies better than another; and some of them seem to be aided in their good effects by combination with carbonate of potash, such as the sulphate of iron, in doses of three to five grains, or of the ferri sulphas exsiccata, in doses of two to five grains, prescribed in pills. The use of ferruginous remedies must be persevered in for months, and the general indications for prescribing the preparations are the same as those given under Anæmia. In pills, the iron preparations may also be combined with extract of nux vomica, or with strychnia, in suitable doses; or the syrup of the phosphates of iron, quinine, and strychnia, may be given (see Anæmia); or the eliminative action of the colon is to be promoted by four grains of the pill of aloes and myrrh taken every night at bedtime, or by a grain of the watery extract of Barbadoes aloes with a little gingerine as a pill. Simple bitter tonics are useful adjuncts to the chalybeate treatment, such as gentian, calumba, and the preparations of cinchona. They aid feeble digestion. Tartarated iron (Ferrum tartaratum) is also a useful remedy, and may be prescribed with alkalies, in doses of six to twenty grains, dissolved in water.

Where a high degree of serous plethora exists, and produces violent excitement of the vascular system, palpitation of the heart, and congestion of the head, venesection may be practised. It not only acts as a sedative, but aids the radi-

cal cure of the disease, inasmuch as it causes the subsequently administered ferruginous preparations to be borne more easily. Both general and local blood-lettings may be used; but the blood must be taken in small quantities, a couple of ounces at a time being quite sufficient (Vogel).

Cholera, Asiatic—*See Cholera, Malignant.*

Cholera, Malignant.—*Definition.*—A disease essentially specific, existing at all seasons of the year in certain parts of India (its perennial endemic area), capable of being propagated or disseminated over the surface of the earth through the atmosphere, or in other ways, but chiefly by means of human intercourse between the healthy and the sick. The seizure is characterized in many (but not in all) cases by premonitory diarrhœa, sudden muscular debility, tremors, vertigo, occasional nausea, and spasmodic griping pains in the bowels, depression of the functions of respiration and circulation, and a sense of faintness and oppression in the præcordial region. A copious purging of serous fluid (alkaline when passed, and in appearance resembling water in which rice has been washed, sometimes containing blood) is succeeded or accompanied by vomiting and burning heat at the stomach, coldness and dampness of the whole surface of the body, coldness and lividness of the lips and tongue, cold breath, an unquenchable thirst, a feeble rapid pulse, difficult and oppressed respiration, with extreme restlessness (a state expressed in physiological language by the term "anxietas"), suppressed urinary secretion, blueness of the entire surface of the body, a sunken and appalling countenance, a peculiarly suppressed voice, a peculiar odor from the body, partial heats of the præcordia and forehead—fatal collapse, a reaction and secondary fever. Under conditions favorable to its propagation malignant cholera often becomes epidemic.

The College of Physicians defines cholera to be "an epidemic disease, characterized by vomiting and purging, with evacuations like rice-water, accompanied by cramps, and resulting in suppression of urine and collapse."

Treatment.—There are few diseases for the cure of which so many different remedies and modes of treatment have been employed as in cholera. In considering the treatment of this disease there are three periods to be provided for,—(1.) The period of diarrhœa, which so frequently precedes cholera—"premonitory diarrhœa." This indication of intestinal trouble must be distinctly recognized as the starting-point of

all other symptoms, and the true source of danger. (2.) The algide period, or collapse ; and, (3.) Period of reaction.

(1.) The Period of Premonitory Diarrhœa.—To check or arrest the diarrhœa is the practical result aimed at by a variety of formulæ. The evacuations ought to be checked as soon as possible. Those in which opium is the main remedy have acquired the most amount of confidence. The management of a case embraces the following conditions :—(1.) That the horizontal position of the body be maintained ; and patients ought to take to bed at once. The necessity for the horizontal posture of the patient is, that it aids the efforts of the circulative powers, which tend to weakness. (2.) That the administration of opium, with or without cordial stimulants, be at once commenced. With regard to opium, its dose must be regulated by, (*a.*) The extent of the nervous prostration ; (*b.*) The rapidity of the dejections ; (*c.*) The extent of vascular depletion. In the cases which present these phenomena in the extreme a much larger dose of opium is required to be given at the outset at one time than in the cases less urgent. (3.) That the induction of perspiration be brought about.

The extensive experience of my friend, Dr. Fergus, of Glasgow, in whose practice I was privileged to assist during the epidemic of 1849, led him to the conclusion (in which I concur) that "there is a first stage at which cholera is curable and preventible"—namely, that of laxity of the bowels previous to vomiting, spasms, or uneasiness of any kind. The relaxation of the bowels may not even amount to diarrhœa, and may be to the extent of only two or three stools a day, where one only was usual. Such relaxation was generally thought of no moment, being attended with no pain. On the contrary, the evacuations often gave a feeling of relief. This is the only stage at which opium is to be given, and that in a full dose. At this stage, in combination with a stimulant, it is often of the highest value. It is only to be given "if the evacuations are still bilious, the pulse fair, and the skin warm." When vomiting, "rice-water" purging, and cramps set in (the phenomena of collapse) it is then too late for opium. Drs. Macpherson and Macnamara record, as the result of their extensive experience in India, that if administered at the proper stage no remedy is so effectual as opium; and the drug may be safely trusted to cure the premonitory diarrhœa of cholera. A dread has arisen of using opium from fear of secondary effects ; but the same writers justly observe,

that if it has a curative effect, we must not shrink from its use from the dread of ulterior consequences. "The vast majority of practitioners have found opium extremely useful in the early stages of the disease. Men like Twining and Parkes, who by no means considered the disease to consist merely in vomiting and purging, were agreed that opium is the medicine to be given in the commencement of the great majority of cases." It calms the brain, relieves the excessive feeling of constriction at the epigastrium, tends to counteract over-secretion from the mucous membrane, favors cutaneous transpiration, and assists the action of such other remedies as stimulants, astringents, carminatives, or absorbents (Gubler). The following formula for pills, each containing a grain of opium, with stimulants, is well known as a most useful anti-spasmodic pill in the early stage of bowel evacuation :—

℞. Pulv. Opii, gr. xii. ; Camphor, gr. xxx. ; Pulv. Capsici, gr. ix. ; Spt. vinc. rect., q. s. ; Conserv. Rosar, q. s. ; Misce et divide in pil. xii.

Moderate doses of opium or morphine, either alone or combined with stimulants (as the pulvis cretæ aromaticus cum opio) are sometimes sufficient to check diarrhœa. When medical men have charge of large numbers of people, as in the army, navy, prisons, workhouses, asylums, hospitals, and the like, it is incumbent on them to make frequent inspections of those under their care, and to seek out any cases of incipient diarrhœa. Responsible officers should be made to take notice of those who go more than once a day to the water-closet at times when a cholera epidemic influence prevails. In military practice, frequent inspection of the men is of cardinal importance. Every man in a regiment should be seen at least three times a day by some medical officer, who should also visit the various guards By walking down the ranks at roll-call, and picking out the men who show the earliest symptoms, cases are thus caught in the stage of premonitory diarrhœa, and saved. The following rules were drawn up by Dr. Fergus, now President of the Faculty of Physicians and Surgeons of Glasgow, and printed and hung up in prominent places, for the direction and management of large numbers of men, in the factories and offices of that city, over which he had charge when cholera was epidemic :—

'(1.) Do not be afraid of cholera, or make it the topic of conversation. Fear and all the depressing passions are injurious. (2.) Do not take brandy ; it is not a preventative ;

and it does harm by disordering the action of the stomach and bowels. (3.) Do not make any change in your usual diet, if it is simple and of easy digestion; take it moderately, and at regular intervals, as long fasting is injurious; and carefully avoid excess in any intoxicating beverage. (4.) Take no excessive fatigue; if overheated, beware of any sudden chill, and see that the skin is kept comfortably warm. If the disease appears in winter, much benefit may be derived from wearing a flannel belt round the body, covering the stomach and bowels. (5.) As soon as cholera appears in a town, a bottle of solution of morphia or laudanum (and a graduated measure) should be kept in every house, place of business, factory, or wherever, in fact, there are a number of people gathered together. Persons travelling should always have it with them, or easy of access. During the existence of the epidemic, one person in each factory, &c., should take the charge of the health of the inmates, and should act as 'house physician,' warning all under his or her care to attend to the slightest relaxation of the bowels. He should remind them that the less pain the more danger, and therefore the more need of immediate and energetic action. (6.) Should the slightest diarrhœa occur, the individual so attacked should at once receive forty minims of solution of morphia or laudanum.* If from home or at business, the patient should be at once conveyed home in a cab, put to bed, and kept warm. If chilled, warm water bottles may be put to the feet. If the first dose has not checked the looseness, the patient should take a second, and then have a flannel cloth thoroughly dipped in turpentine, placed all over the stomach and bowels for from forty minutes to an hour, or a large, soft, warm poultice of linseed meal and mustard for one or two hours. If the second dose has not effectually checked the diarrhœa, and medical assistance has not arrived, a third dose may be taken. (7.) The patient must remain in bed two or three days after the diarrhœa is checked. I insist strongly on this, for the patient often feels so well that it is difficult to get him to attend to it. (8.) To relieve the thirst,

* If a measure is not at hand, a small teaspoonful. Of course this dose is for adults. Below that age the doses should be a drop for each year till twelve or fifteen, and after fifteen a drop and a half for each year, up to forty minims, or a small teaspoonful. More portable than laudanum, and of equal efficacy, would be pills composed of a grain and a half of opium, and a grain of cayenne pepper in each pill, three of which may be taken with safety, till medical assistance arrives.

a piece of ice may be given, or a mouthful of iced water, or soda water; but in no case must more fluid be taken at a time, and all food should be abstained from till from fifteen to eighteen hours after the opiate has been administered. Then, and for two or three days, the diet should consist of such food as rice, sago, arrow root, Indian corn flour, tea and toast, &c.; about the third day beef-tea or chicken-soup might be taken. (9.) These rules are for the first stage, and for it only—*i. e.*, the diarrhœa. If a person has neglected the first warning, and is in the second stage—*i. e.*, has cramps, vomiting, and stools like rice-water, without smell—you should, till medical assistance arrives, place the patient in bed surrounded with bottles of hot water, and give him a little ice, and mouthfuls of soda and water. If the cramps are severe, you must rub the limbs with turpentine, or chloroform and oil."—*Glasgow Med. Journal*, 1866.

The following cholera mixture (as it was called) was proposed by the Board of Health during the prevalence of cholera, and was no doubt useful in many cases of diarrhœa:

℞ Pulveris Arom., ʒ iii.; Tinct. Catechu, f ʒ x.; Tinct. Cardam. Comp., f ʒ vi.; Tinct. Opii, ʒ i.; Mist. Cretæ, preparat. ad f ℥ xx. Of this mixture the dose is one ounce.

Bulky doses of remedies are obviously objectionable. The usual remedies known as "astringents" (compared with each other, or with opium) have no decided influence for good. "Astringents," as such, have merely a negative effect.

Of the various preparations of opium, Dr. Macnamara gives preference, as Dr. Fergus does, to the tincture. Thirty drops of laudanum in water should be administered as soon as possible after the first watery motion has been voided, and this dose must be repeated if the purging does not stop after the first dose has been given. A pill composed of one grain of opium and two grains of the acetate of lead, to be taken every hour till the purging stops, is a useful formula, and more easily distributed than laudanum. Supposing thirty drops of laudanum to have been administered; and, that within half an hour the patient is again purged, Dr. Macnamara does not hesitate to repeat the dose at once. It is not advisable to wait until two or three motions have been passed. Watery painless purging should be at once stopped by such means. When the disease is endemic, and still more so when it is epidemic, every family should have a bottle of laudanum, to be resorted to at once after the first watery motion. If the motion is accompanied by a feeling of exhaustion, and a

faintish sensation at the præcordial region, the dose of laudanum should be followed by "a stiff glass of brandy and water." "No more erroneous practice can possibly exist in India, or any other place where cholera exists, than that of allowing diarrhœa to go on upon the supposition that the attack is a bilious one, and that the purging is a salutary or a harmless process. More deaths from cholera have been occasioned from this than from any other mistaken notion on this subject. The issue is simply this: Supposing the attack to be a bilious one, we stop it with opium, and may subsequently have to administer a dose or two of blue pills and rhubarb; or, perhaps, a little judicious starving may answer the same purpose. But if, under the impression that the diarrhœa is bilious, we allow it to run on, it may become, in the course of a few hours, the second stage of cholera, and our opium may then be of little or no use."

In the case of children the dose of laudanum must be regulated by the age of the child.

But there are certain cases in which, although the diarrhœa may be altogether checked by such remedies, yet the disease is not cured. Symptoms characteristic of the algide or collapse stage supervene. These are the cases which have been held to justify that method of treatment which has for its object elimination by the promotion of purging and of vomiting—excretion of the poison by the alimentary canal. The advocates of this method of treatment also lay stress upon the fact that those are the worse cases in which the diarrhœa is the least; and that those cases are the most hopeful in which diarrhœa and vomiting are the most severe. Dr. George Johnson's treatment by castor-oil has for its object the elimination in this way of the specific poison; and it may be said of it, that it is neither more nor less successful than other remedies of its class. It, as well as purely astringent mixtures, excites such loathing in most cases that it cannot be persisted in. Dr. Johnson agrees that "diarrhœa during an epidemic season ought not to be neglected even for an hour." He regards such diarrhœa as an indication of the presence of offending material in the alimentary canal—*e.g.*, (1.) Unwholesome, undigested food; or, (2.) A large and unnatural accumulation of the feculent contents of the bowel; or, (3.) Noxious secretions poured from the blood into the bowels, in consequence of the action of a specific blood-poison. To this latter process Dr. Johnson believes choleraic diarrhœa to belong. Therefore he lays down the

following rule:—"Not to attempt by opiates, or by other directly repressive means, to arrest a diarrhœa while there is reason to believe that the bowel contains a considerable amount of morbid and offensive material; for, such offensive material must come forth before diarrhœa can permanently cease." Purging he considers the natural way of getting rid of the irritant cause; and the safest purgative he believes to be castor-oil. So far as meeting the conditions of examples (1.) and (2.) as above stated, the treatment cannot be improved upon; but that it is the best possible treatment to meet the preliminary diarrhœa or relaxation of the bowels in cholera cannot be regarded as established nor warranted by what we know of the pathology of the disease as set forth in the text. Assuming it to be proven that malignant cholera is a specific disease in which there is poisoning of the blood; and believing, as I do, that such is the pathology of the disease; and, seeing that the College of Physicians entertain a similar belief—for malignant cholera has been classed by the College in Section A of the General Diseases, concerning which it is written, that "it comprehends those disorders which appear to involve a morbid condition of the blood, and which present the following characters:—they run a definite course, are attended with fever, and frequently with eruptions on the skin, and are more or less communicable from person to person." Assuming the pathology of malignant cholera to be as here represented, I cannot admit that the best indications for the treatment of the disease are those which suggest an attempt to eliminate the poison by the promotion of purging and vomiting. I do not believe we can, by any remedy, nor by the over-stimulation of any eliminative function, ever get rid of any such poisons as those of small-pox, measles, scarlet fever, typhus fever, enteric fever, or any other general and specific disease-poison comprehended in Section A. No method of treatment, based on the so-called principle of eliminating a poison, has ever effected a cure of any one of these diseases; and I do not see any likelihood of the principle being more successful in cases of malignant cholera than with other diseases of the class. We have never yet been able to "cut short" any of these diseases by emetics, purgatives, or diaphoretics. Neither emetics nor purgatives have ever cut short small-pox, although, if we are to follow indications of treatment eliminative of poison, we ought to encourage such vomiting and purging which mark the initiative stage of most of the ex-

anthemata. The early attempts to cure small-pox, scarlet fever, and measles, by promoting copious eruption on the skin, in the belief that the poison was so eliminated, proved a signal failure. The popular belief that "better out than in" was not found to be a safe principle of treatment in the management of those diseases. We have no eliminative method of treatment which will rid the blood of such specific disease-poisons; just as we have no antidote which will destroy or counteract the influence of snake-vemon when once it has got accidentally or artificially into the blood. We do our best when we try only to guide the patient through those specfiic diseases, by moderating the violence of the expressions of the malignant phenomena, not by increasing them. We cannot cure these diseases. The most successful results in the treatment of all of them have been got by those agencies which have led to modified and less malignant forms of disease, such as by vaccination, in regard to small-pox, and by sanitary improvements generally. We do not think of, and dare not attempt to promote, diarrhœa or specific lesion in the intestines during enteric fever. Why should we be induced to promote diarrhœa in malignant cholera, in the belief that we are thereby to free the blood from the specific poison of the disease? We have no evidence that the body is freed of the poison in this way. The bowel discharges may be, and undoubtedly are, means (but not necessarily the only means) of propagating the disease; but it does not follow that promoting their discharge frees the blood from poison either in enteric fever or in cholera. By moderating the catarrhal flow in enteric fever, it is not found that we aggravate the disease and lock up specific poison in the system; certainly by moderating, curtailing, or restraining the diarrhœa of cholera, the only chance is left us of guiding the patient through that disease; and OPIUM is the remedy which, by actual experience, alike in India and in this country, seems most worthy of reliance; but,—only at the commencement of laxity, or relaxation of the bowels, in seasons when cholera is epidemic.

Treatment based upon conflicting theories (which are but theories after all) as to the nature of the disease, is greatly to be deprecated; and on this point Dr. Fergus makes the following pertinent remarks:—

"The influence of the theories of Dr. G. Johnson and others is to be seen in the instructions recently issued by

the Board of Supervision in Scotland—very excellent as to the sanitary part, but in the medical portion (like most things issued by a committee) an evident compromise. It is a compromise, I believe, between the facts and a theory. . . . . We are told, under the fourth section, to take castor oil or rhubarb and soda for looseness of the bowels, and afterwards the astringent mixture or pills—the former being intended as eliminators to promote the diarrhœa, the latter to check it. If this advice is followed during an epidemic of cholera, the consequences may be very serious. It is well known that during an epidemic there is a general tendency to relaxation of the bowels, and that they become very susceptible of the smallest dose of even the mildest medicine. Any one who has had much to do with cholera must have frequently met with cases which appeared to be the direct consequence or result of a slight dose of medicine. The risk is that the castor-oil and rhubarb would drive most of the cases into the second stage of cholera, and then the use of astringents and opiates at that stage would increase the danger immensely. As to the remedies ordered, the quantity of laudanum—viz., five drops per dose—is too small, and there is no necessity for the chalk and catechu. Before the opiate could produce much effect, the stomach would be overloaded with the chalk and catechu, to the extent of inducing vomiting. The pills should be ordered after each discharge from the bowels; but people will find it easier to provide themselves with laudanum than to use complicated mixtures or pills."

"With regard to castor-oil," writes Dr. Macnamara, "I was acting as House Physician to King's College Hospital, in 1854, when Dr. G. Johnson was treating his cholera patients on eliminative principles. I caught some of his enthusiasm on the subject, and came out to India the same year full of confidence and hope in castor-oil. These ideas were destined soon to pass through a severe ordeal; for in the following year I was left at Bhaugulpore in charge of a field hospital. I was the only medical man in the place, when cholera burst out among the Europeans and natives under my care: I went boldly to work with castor-oil, but it absolutely and completely failed; the mortality from the disease was fearful. I have since on several occasions tried castor-oil in cholera, but I have now finally abandoned it, having never seen any benefit arise from its use." In the second or algide stage the object is to promote reaction and to keep it in moderation.

If the patient is not seen till profuse discharges—rice-water-like—have taken place, the time for all active treatment has passed, and efforts must be directed solely to restoration and repair; and, if possible to rendering the stools acid, by the following draught every half hour for four hours, and then to continue every hour (Macnamara):—

℞. Dilute sulphuric acid, and dilute acetic acid, of each m xv.; carbolic acid, half a drop; water, an ounce and a half; and opium may be added to the first and second doses, as existing circumstances may indicate.

To promote reaction in cholera and diarrhœa, the following formula has met with most universal approval in this country and in India. So highly is it valued, indeed, that it is ordered to be always in store, and in readiness in the "*Medical Field Companion*" of the army when on the march:—

℞. Ol. Anisi., Ol. Cajeput, Ol. Juniper, aa ʒ iss,; Æther., ʒ ss.; Liquor Acid. Halleri, ʒ ss.; * Tinct. Cinnam., ʒ ii.; misce. The dose of this mixture is ten drops every quarter of an hour in a tablespoonful of water. An opiate may be given with the first and second dose, but should not be continued, for reasons already given.

The nitrite of amyl has also been recommended in the collapse of cholera by several physicians. It ought to be given internally, or by subcutaneous injection rather than by inhalation (Dr. T. L. Brunton, *Brit. Med Journ.*, of Jan. 13, 1872). The indications generally followed are to treat the case as we should a similar state in typhoid fever, and to moderate the affection of the bowels by milk opiates, by enemata, and by sinapisms to the abdomen; also, to relieve the head by leeches and cold lotions, and subsequently, as the tongue becomes brown, to support the patient with wine, sago, strong broths, and a generally cordial treatment. During the reaction stage Dr. Andrew Clark, of the London Hospital, employed with great success a powder composed as follow:—

Hyd. c. Creta, gr. ii.; Pulv Ipecac., gr. ss.; Pulv. Doveri, gr. iiss.; night and morning.

The cases most benefited by this remedy were those in which the tongue had become dry and hard, salines, lemonade, and chlorate of potash drinks being freely given. Mus-

* The Liquor or Elixir Halleri consists of one part of concentrated sulphuric acid to three parts of rectified spirit. It is commonly employed in Germany in the treatment of typhus and allied diseases, in doses of five to twenty drops in solution (Murchison, l. c., p. 266).

tard plasters or blisters to the nape of the neck were found to be of use by inducing the return of the urinary secretion.

The sick-room should be supplied with fresh air. Liquids should be assiduously applied to every surface capable of absorbing them, and the patient should be suffered to remain as free from officious treatment as possible. Heat applied in the dry form is to be avoided, but cloths moistened with hot water may be applied; or the patient may be wrapped up in warm, moist blankets, and hot bottles or bags of heated sand placed around his cold and benumbed body. After the temperature is restored, the surface should still be kept moist, by sponging from time to time, or by the use of the wet sheet, to moderate the reaction. Urgent thirst is one of the most distressing symptoms in cholera. There is incessant craving for cold water—doubtless instinctive, to correct the inspissated condition of the blood, due to the rapid escape of the liquor sanguinis. It was formerly the practice to withhold water—a practice as cruel as it is mischievous. Water in abundance, pure and cold, should be given to the patient, and he should be encouraged to drink it, even should a large portion of it be rejected by the stomach; and when the purging has ceased, some may, with much advantage, be thrown into the bowel from time to time (Maclean). Niemeyer recommends cold wet compresses to be frequently laid over the abdomen; and, also a grain of calomel every hour. Such compresses are said to be grateful to the feelings of the patient, whose sense of heat is great, although he may be cold to the bystander. The practice also is consistent with the lesions, especially the intensely pink vascularity seen in the intestines after death. The following as a drink is generally relished and retained upon the stomach:—"A raw egg beat up with half a pint of milk, and then mingled with about a pint and a half of water, adding as much salt as will give the whole an agreeable taste" (Dr. Andrew Buchanan,). Or whey, milk and water, weak chicken soup, or any similar decoction, may be drunk ad libitum. Enemata of warm milk, repeated as often as expelled, are of the highest importance if the evacuations have ceased, by supplying an absorbable fluid, by mitigating abdominal pains, and diluting acid secretions. The secreting of urine may be promoted by dry cupping over the loins, by the use of solution of chlorate of potash, and the like. But suppression of this secretion is most to be dreaded where opium has been too freely used in the treatment

In men of intemperate habits we often see, during the stage of reaction, obstinate vomiting of thick, tenacious, green paint-looking matter, probably bile-pigment, acted on by some acid in the stomach or ailmentary canal. It is a symptom of evil omen, and often goes on uncontrolled until the patient dies exhausted, and this although all other symptoms may promise a favorable issue. It may last for a week, resisting all remedies,and proving fatal when the urinary secretion has been restored, and all cerebral symptoms have subsided. Alkalies in the effervescing form, free stimulation of the surface, and chloroform in small doses, offer the best hope of relief for such cases. The patient should be nourished more by the bowel than the stomach when vomiting is present. Ice should be given *ad libitum*, where it can be obtained, not only to dissolve in the mouth, but to swallow in pieces of convenient size (Maclean).

A plan, perhaps peculiar to this country, which was practised to bring about reaction (when the inefficiency of medicines was generally admitted), was an injection into the veins of the patient of a solution of half an ounce of muriate of soda, and four scruples of sesquicarbonate of soda, in ten pints of water, at a temperature varying from 105° to 120° Fahr. This solution was injected slowly, half an hour being spent in the gradual introduction of the ten pints, and the immediate effects of this treatment were very striking. The good effects were rapid in proportion to the heat of the solution, but a higher temperature than what is stated could not be borne. After the introduction of a few ounces, the pulse, which had ceased to be felt at the wrist, became perceptible, and the heat of the body returned. By the time three or four pints had been injected, the pulse was good, the cramps had ceased, the body, that could not be heated, had become warm, and instead of a cold exudation on the surface, there was a general moisture; the voice—before hoarse and almost extinct—was now natural; the hollowness of the eye, the shrunken state of the features, the leaden hue of the face and body had disappeared; the expression had become animated, the mind cheerful, the restlessness and uneasy feelings had vanished; the vertigo and noises of the ear, the sense of oppression at the præcordia, had given way to comfortable feelings; the thirst, however urgent before the operation, was assuaged, and the secretion of urine restored, though by no means constantly so. But these promising appearances were not lasting: the vomiting continued, the evacuations became

even more profuse, showing that the remedy did not touch the root of the evil. The patient soon relapsed into his former state, from which he might again be roused by a repetition of the injection. This amendment, however, was transient, and the fatal period was not long deferred. Of 156 patients thus treated at Drummond Street Hospital, Edinburgh, only twenty-five recovered,—a lamentably small proportion ; and small as it is, it seems doubtful if the recoveries were final or complete (Mackintosh, "Principles of Pathology," p. 365). Nevertheless, injection of fluid by the veins ought still to be persevered in as a remedy in the right direction—with due regard to temperature—as a means of prolonging life. A trial made by Surgeon-Major E. Y. Kellat at the close of an Indian epidemic is deserving of more extended experience, namely :—To inject distilled water at a temperature of 99° Fahr. hypodermically, into the connective tissue of the body, or into the cavity of the peritoneum. He thus aimed at establishing an artificial anasarca or an ascites ; experience having shown that of several instances of cholera attacking persons suffering from such conditions, the effused fluid became rapidly absorbed during the course of the cholera—the patients recovering. The distilled water he thus proposes to inject hypodermically, must filter through the living tissue before it can reach the circulation ; and hence be more fitted to mingle with the blood, than when thrown into the veins directly from contact with air. Water is the cardinal want. The supply of it fails first : and thus introduced it avoids contact with the morbid surface and secretions of the stomach and bowels, which are barriers to its absorption in that direction.

Stimulants tend to irritate the stomach, and are of no use in exciting the heart to any salutary action. Employed as in typhus, they are worse than useless. All violent remedies are greatly to be deprecated. Strychnia, prussic acid, tobacco, galvanism, boiling water, the actual cautery, or firing the spine, or bags of ice to the spine, or injections of spirits, are proven by trials to be of no use ; nor can their recommendation be supported except upon baseless theories, having no rational relation to the pathology of the disease.

To generalize on the subject of remedies in cholera, the broadest conclusion seems to be, that remedies with an acid, rather than an alkaline or neutral reaction, have been the most beneficial.

Prevention of Cholera.—The following summary, from the

writings of Dr. Parkes and Mr. Simon, will best conclude this account of cholera. The importance of the topics noticed, and the uncertainty that yet enshrouds many of them, may justify, it is hoped, the amount of space which the subject has taken up:—

"For the first time in the history of cholera a new system of prevention has been brought largely into play in Europe—viz., the addition to the discharges of a presumed disinfecting substance. This plan, of course, is based on the belief that the principal (perhaps the only) mode of spread is by means of the putrefying evacuations; and the results obtained by it give certainly some strong evidence in favor of this opinion. In this country the difficulty has been to make the public (and, in some cases, even the medical men) sensible of the importance of this plan, and of the necessity of giving it a complete trial. In some cases in which it has really been fairly tested, it appears to have arrested the spread of the disease, as at Bristol; and Dr. Budd's paper in the *Brit. Med. Journ.*, April 13, 1867, gives good evidence on this point. In Southampton also, I believe, the spread was limited in this way, though it was not arrested so perfectly as at Bristol. In London, and several provincial towns, the method was also tried more or less fully. In Germany, owing to the influence of Pettenkofer, the disinfecting plan was also brought into play, and the system followed has been described by that chemist.* Without analyzing all the evidence, I proceed to give the most important practical rules. The dangerous period of the choleraic stools is supposed to be when they become very ammoniacal. This occurs sometimes immediately they are passed, but usually not to any extent for some time. It is thought (but of course exact scientific proof is not readily attainable) that anything which makes and keeps them acid prevents the changes which cause the poison. The three principal means of doing this are the use of carbolic acid, and sulphate of iron (with or without permanganate of potassium), and the salts of zinc. Each has its advantages, and all may be used. The carbolic acid, from its liquid form and from its volatility, is excellently adapted to purify air, and to be used when surfaces are to be washed. It is also useful for sewers and closets. The sulphate of iron in substance and strong solu-

* "Cholera Regulativ," von H. Griesinger, M. Pettenkofer, and C. A. Wunderlich, *Zietschrift. fur. Biologie*, Band. II., p. 435.

tion is better adapted for being put in the utensils in a room. as it has no smell, but it may be equally used for sewers and for watering streets. The sulphate of zinc (for the chloride is too dear) is better adapted for being put on linen or on floors, as it does not ironmould the linen like the sulphate of iron. The carbolic acid has not been used much in Germany, as it is still too dear; but Pettenkofer makes an observation of importance—viz., that when added to sulphate of iron the mixture seems to have more power of preventing ammoniacal development than either substance separately. If so, it might be desirable, as a matter of practice, to use the two together as much as possible. The salts of zinc (sulphate or chloride) may be also used, but are perhaps not so good, and in some forms are dearer than the iron salts. Chloride of lime does not prevent the ammoniacal change, and appears altogether less useful. The quantity in which these substances must be used is as follows:—For each healthy person, daily, about three-quarters of an ounce of sulphate of iron, or one drachm of strong (but impure) carbolic acid, is sufficient. This amount will entirely prevent any decomposition of the fæces for several days. In a town, therefore, where sewers are used, the above amount of sulphate of iron, or carbolic acid, multiplied by the number of persons, should go into the sewers daily, and, if possible, should be passed in from the houses, so as to act on the house-drains as well as on the main sewers. If the place is not sewered, then the disinfectants should be added to the cesspools, middens, latrines, or whatever plans may be in use. If both sulphate of iron and carbolic acid are used, which is to be recommended, half the quantity of each should be employed. The iron should be dissolved in a good deal of water.

"In Southampton, is 1866, carbolic acid was chiefly used; and the average amount was about twenty gallons daily for a town of 50,000 people: it certainly appeared useful. If an aerial disinfection is needed, sulphurous acid (obtained by burning sulphur) is perhaps the best. Nitrous acid fumes are certainly very powerful; and one or other of these substances should be used for half an hour daily in all privies or latrines. For washing clothes the iron salts are not applicable, as they stain linen. Carbolic acid gives a disagreeable smell. Either a watery solution of sulphurous acid, or a solution of zinc salts, should therefore be used. Baking the clothes, at a temperature of 250°, or boiling, should be

used. In hospital wards, dead-houses, &c., it is a good plan to sprinkle sawdust on the floors, and to moisten it with the weak carbolic acid (one part of crude acid in sixty or eighty of water). These measures should be commenced when cholera is apprehended. Every privy and sewer should have twice daily the mixed carbolic acid and sulphate of iron solution. If cholera is introduced, the amount should be doubled in the privies of all the adjacent houses, while the closet of the affected house should never act without a portion of the disinfecting liquid being placed in it. If the disease breaks out, a plan recommended by Dr. Budd is worthy of imitation—viz., to place a layer of carbolic acid powder (carbolic acid and lime) in the bed, under the breech of the patient. The disinfection in this way of the closets and privies of hotels, railways, and workshops, should be commenced very early."

A saline antiseptic, "chloralum, has been recently much commended; and on the subject of prevention Mr. Simon has also made some valuable suggestions:—

"Wherever cholera is known to exist too much importance cannot be attached to the precaution of thoroughly disinfecting, without delay, all discharges from the stomach and bowels of persons suffering under the disease, and of disinfecting or destroying all bedding, clothing, towels, and the like which such discharges may have imbued; and, of course, neither choleraic discharges, nor any slops which may contain traces of them, should ever (even when supposed to be disinfected) be cast into any position from which they may get access into drinking water. But, although the duty of observing those precautions is one which ought never to be neglected, populations cannot prudently stake their lives on the chance that it will be completely fulfilled for them. Apart from all questions of negligence, the degrees of cholera are too many, and the slight and incipient cases far too apt to escape observation, for any such defence against its infection to be more than partial. And, therefore, the main object for endeavor must be to secure everywhere such local circumstances that the infective material, though not disinfected, would be unable to spread its influence among the population. The dangers which have to be guarded against as favoring the spread of cholera infection are particularly two. First, and above all, there is the danger of water supplies which are in any (even the slightest) degree tainted by house refuse or other like kinds of filth; as where there is

outflow, leakage, or filtration from sewers, house-drains, privies, cesspools, foul ditches, or the like into springs, streams, wells, or reservoirs from which the supply of water is drawn, or into the soil in which the wells are situate; a danger may exist on a small scale (but perhaps often repeated in the same district) at the pump or dip-well of a private house, or, on a large and even vast scale, in the source of public waterworks. And secondly, there is the danger of breathing air which is foul with effluvia from the same sorts of impurity.

"Temporary security must, as far as practicable, be sought in measures of a palliative kind:—(*a.*) Immediate and searching examination of sources of water-supply should be made in all cases where the source is in any degree open to the suspicion of impurity; and the water both from private and public sources should be examined. Where pollution is discovered everything practicable should be done to prevent the pollution from continuing, or, if this object cannot be attained, to prevent the water from being drunk. (*b.*) Simultaneously there should be immediate thorough removal of every sort of house refuse and other filth which has accumulated in neglected places; future accumulations of the same sort should be prevented; attention should be given to all defects of house-drains and sinks through which offensive smells are let into houses; thorough washing and lime-washing of uncleanly premises, especially of such as are densely occupied, should be practised again and again. (*c.*) Disinfection should be very freely and very frequently employed in and round about houses wherever there are receptacles or conduits of filth, wherever there is filth-sodden porous earth, wherever anything else, in or under or about the house, tends to make the atmosphere foul.

"In the absence of permanent safeguards no approach to security can be got without incessant cleansings and disinfections, or without extreme and constant vigilance against every possible contamination of drinking-water."

Then again as to the risk of contagion, Mr. Simon writes:

"Cholera in England shows itself so little contagious, in the sense in which small-pox and scarlatina are commonly called contagious, that, if reasonable care be taken where it is present, there is almost no risk that the disease will spread to persons who nurse and otherwise closely attend upon the sick. But cholera has a certain peculiar infectiveness of its own, which, where local conditions assist, can operate with

terrible force, and at considerable distances from the sick. It is characteristic of cholera (and as much so of the slightest choleraic diarrhœa as of the disease in its more developed and alarming forms) that all matters which the patient discharges from the stomach and bowels are infective. Probably, under ordinary circumstances, the patient has no power of infecting other persons except by means of these discharges, nor any power of infecting even by them, except in so far as particles of them are enabled to taint the food, water, or air which people consume. Thus, when a case of cholera is imported into any place, the disease is not likely to spread, unless in proportion as it finds locally open to it certain facilities for spreading by direct infection. In order rightly to appreciate what these facilities must be, the following considerations have to be borne in mind :—First, that any choleraic discharge, cast without previous thorough disinfection into any cesspool or drain, or other depository or conduit of filth, infects the excremental matters with which it there mingles, and probably more or less, the effluvia which those matters evolve ; secondly, that the infective power of choleraic discharges attaches to whatever bedding, clothing, towels, and like things have been imbued with them, and renders these things, if not thoroughly disinfected, as capable of spreading the disease in places to which they are sent (for washing or other purposes), as, in like circumstances, the patient himself would be ; thirdly, that if, by leakage or soakage from cesspools or drains, or through reckless casting out of slops and wash-water, any taint (however small) of the infective material gets access to wells or other sources of drinking-water, it imparts to enormous volumes of water the power of propagating the disease. When due regard is had to these possibilities of indirect infection, there will be no difficulty in understanding that even a single case of cholera, perhaps of the slightest degree, and perhaps quite unsuspected in its neighborhood, may, if local circumstances co-operate, exert a terribly infective power on considerable masses of population."

The inquiries made through the Epidemiological Society show that special hospitals, or special wards in hospitals, ought to be devoted (with a separate and special staff of attendants for day and night duty, or more frequent periods of relief) entirely to the management of cholera patients.

With regard to India much may still be expected from a thorough improvement of its sanitary condition : and espec-

ially of the filthy towns and bustees, or native villages, constructed without any plan or arrangement, without roads, without drains, ill-ventilated, and never cleaned—the abodes of misery, vice, and filth—the nurseries of sickness and disease. These are the localities within the endemic area of cholera which require special attention and improvement in the first instance ; and which are now receiving the attention of the Indian authorities through their special sanitary administration.

Cholera, Simple.—*Definition.*—An acute catarrhal inflammation of the mucous membrane of the stomach, which extends into the intestines, attended with nausea, retching, and vomiting, followed by severe watery diarrhœa, consisting of profuse transudation of fluid containing little albumen ; the whole system generally being affected, as evidenced by fever.

Treatment.—If the stomach retains undigested food believed to be unwholesome, a mild emetic may be given ; but this is rarely necessary, as the stomach usually empties itself completely. When the solid matters have been ejected, the subsequent treatment will depend on the acidity or acrid nature of the matter ejected. Simple alkaline remedies, like carbonate of soda in solution *ad libitum*, will sometimes relieve the nausea and sickness ; and when the vomiting becomes liquid, opium is the remedy most to be relied upon. It must be, however, given in solution, such as laudanum, Battley's solution, or with chloroform and other stimulants, as in the form of chlorodyne. A full dose of either of these, or a full dose of muriate of morphia, laid on the tongue, should be administered immediately after the act of vomiting. If the first dose should be immediately rejected, a second is to be repeated ; if that too is rejected, a third may be so given, but no more. An enema of laudanum, one to two drachms, with starch must be given instead, directly after an evacuation of the bowels. If this is rejected after being again repeated, then hypodermic injection of solution of morphia may be adopted ; and in any form when retained, the remedy will require repetition every hour or half hour till the vomiting and purging are arrested. The effects of each dose must be carefully watched, so that narcotism may not be induced. It is important that so much fluid may not be taken as the greatness of the thirst desires. A table-spoonful of ice-cold water, given at short intervals, or a bit of ice to dissolve in

the mouth, is all that ought to be permitted. Gruel made from the boiled fluid in which oatmeal has been soaked, and allowed to cool, and given with ice, is a grateful and soothing drink.

Chorea.—*Definition.*—An irregular spasmodic convulsive action of the voluntary muscles, ceasing during sleep, of a clonic kind, especially a profusion of movements of the face in smiles and frowns, and of the trunk and extremities in gesticulations. The movements are either entirely withdrawn from the control of volition, or but little under the direction of the will. The disease is brought on by fear or emotion, or without obvious exciting cause. It has special relation to certain other nerve-disorders, also to rheumatism and to heart affections.

Treatment.—Having ascertained a time limit to the disease we are able to judge as to the effect of medicinal remedies, observing by how much they shorten its duration. The remedies given may be classed into three divisions: (1.) Anti-rheumatic remedies, as potash, iodides, bark; (2.) nervine tonics, arsenic, zinc, iron; (3.) empirical, as ice or ether over the spine, galvanism, sedatives.

From the use of ether to the spine—a plan so strongly commended by a few—Dr. Andrew Clark has seen no benefit. In his experience rest and the free use of arsenic are the remedies which shorten most the duration of the disease. Arsenic, in the form of Fowler's solution, is also well spoken of by Romberg, in doses of three to five drops. Dr. Bristowe also is in favor of arsenic, given in small doses, and continued for some length of time. Experience also shows that, in most simple cases, any special treatment by drugs may be dispensed with; and that the chief matter to attend to is the general health and nutrition of the patients, which may be sufficiently dealt with by good diet, the withdrawal from causes of excitement and annoyance, and by discipline and sensible management. There are, however, various drugs which may prove valuable auxiliaries; as, for instance, the salts of iron when there is anæmia, and in all cases cold or tepid bathing; or the cold douche to the spine, or the shower-bath. In the rheumatic group of cases, much the same course of tonic treatment is generally applicable; any special cardiac symptoms calling for appropriate remedies. In the reflex group, the rule of action is to remove the cause of reflex irritation. Cases with high temperature and a

febrile condition indicate the presence of collateral disease, only indirectly associated with choreic movements, and call for treatment directed to the removal of the organic mischief. In several cases of very severe chorea, tartar-emetic has been found of great service; and in many of moderate severity, bromide of potassium was apparently useful (Arlidge).

Generally, therefore the indications for the treatment of chorea are—(1.) To remove, if possible, all morbid states of the body which may tend to aggravate the disease, such as constipation, anæmia, amenorrhœa, worms; (2.) By well-regulated purgative medicines to subdue any cerebral congestion; (3.) To sustain the strength and improve the vigor of the nervous system by tonic and stimulant medicines, by food, and by the cold bath. The particular tonic is not of much moment. Dr. Wood recommends the powder of the black snake root (cimicifuga, in doses of from half a drachm to a drachm, or from one to two fluid ounces of a decoction; or from one to two drachms of a saturated tincture should be given three or four times a day, and continued for several weeks, the dose being gradually increased till it produces headache, vertigo, or disordered vision. The sulphate of zinc has also had the credit ascribed to it of curing a large number of cases, beginning with a grain in the form of a pill, three times a day, and increasing the dose till it reaches seven or eight grains daily. The preparations of iron are also frequently resorted to with benefit. But Dr. Walshe did not find any of these remedies at all useful in the acute case he has described. Of all the remedies he tried, the "extract of cannabis Indica" was followed by the most satisfactory results. It exercised a sedative influence on the muscular action in a marked degree, and that immediately. The Indian hemp was given in doses of one-fourth of a grain of the extract thrice daily. The dose was subsequently increased to half a grain, and at the same time one-grain doses of nitrate of silver were administered, and a draught containing eight drops of dilute nitric acid. Nitrate of silver he found to have no mean influence in aiding the cure. Dr. Corrigan had also previously used Indian hemp with much success in chorea (*Med. Times and Gazette*, 1845, p. 29; also *Dublin Hosp Gazette*).

The tincture of Calabar beans (℥ i. to ℥ i. of alcohol,) beginning with twenty minims three times a day, is also recommended by Dr. J. W. Ogle; the dose to be increased by ten minims a dose, up to ℥ i. The student is recommended to

consult a valuable paper "On the Uses of Indian Hemp in Nervous Diseases," by Professor Russell Reynolds, in Beale's *Archives*.

Trousseau and Niemeyer consider narcotics to be of great value in the form of large doses of morphine; others are of opinion that narcotics are not well borne in chorea.

Gentle applications of the galvanic current along the spine, the patient standing erect, have been successful in the hands of Benedikt. The current should be just strong enough to be felt distinctly without pain. Chapman's ice-bags to the spine are also of use.

Chloroform has been used with benefit to control the violent movements.

The best treatment is the improvement of diet, change of surroundings, and moral discipline. Hence it is that children with chorea improve so much in well administered hospitals, where the food is abundant and discipline well maintained. But choreic patients must not be associated together, because the disease tends to be kept up apparently by imitation, especially amongst children.

Of other classes of stimuli, camphor, in five-grain doses, has acquired much reputation, especially after the alvine discharges have become healthy by the action of purgatives. Many young women who attribute the attack to fright, frequently get well from the simple administration of the spirit of nitrous ether in one fluid drachm doses three times a day, combined with the officinal camphor mixture. The catalogue of remedies which have been proposed is endless. In many instances, however, the above medicines may be continued for weeks without any manifest improvement. In such cases the cold bath, or the cold shower bath, is an excellent adjuvant; and, unless the patient is suffering from some structural disease, the case uniformly yields to this conjoined treatment; great care and attention being bestowed on the regulation of the diet, which should be light, nutritious, and easily digested.

Chorea, Rhythmical Hysteric.—*Definition.*— A choreiform affection under the influence of hysteria, and preceded by it (Charcot).

Treatment.—Professor Charcot recommends that prolonged and repeated ovarian compression might be maintained with benefit to such cases as occur in the female by means of some such instruments as are used for compression of large vessels

like the aorta. So also the application of ice bags to the ovarian region for half an hour at a time, repeated several times a day for several days, has had the effect of arresting the attacks, or of lessening their intensity. He prefers, however, the inhalation of ether or of nitrite of amyl. Professor Trousseau has found cases of those forms of chorea to improve under the influence of oil of turpentine in capsules containing ten minims each, of which ten were taken daily for twelve to fifteen days a month; and to use warm baths of several hours' duration.

Colic.—*Definition.*—A painful affection of some portion or the abdomen, caused by violent contraction of the muscular fibres of some portion of the intestinal canal.

The Treatment is by opiates, chlorodyne stimulants, and purgative medicines. When the bowels are constipated, five grains of calomel, fifteen grains of jalap, and one grain of opium, should be administered immediately, and followed by—

℞. Mist. Camphoræ c. Magnesiæ Sulphat., ʒ j.; Tinct. Hyoscyami, m xv. to xx.; Tinct. Cardamomi, ʒ j. To be repeated every five or six hours, until stools are obtained.

In mild cases a scruple of rhubarb, or half an ounce of castor-oil, or other mild purgative, combined with a grain of opium, may be substituted for opium, calomel, and jalap. Some have doubted the propriety of administering opiates at the onset of the disease; but it is certain that a mild purgative, combined with a mild narcotic, will effect more than a drastic purgative without such combination. Opium in full doses (gr. i. to ii.) is more generally useful in colic than any other remedy. Enemata often give immediate relief. Externally, the application of large bags filled with hot chamomile flowers, or of heated sand, or heated salt, or of the stomach-warmer filled with hot water, are useful. The warm bath, fomentations, or a large linseed or mustard poultice over the abdomen, are also highly useful auxiliaries. The diet should be sago and arrow-root, with a little brandy; and for some time after the patient has recovered it should be light, and perhaps limited to fish and puddings.

Colic, Biliary.—*Definition.*—Concretions of certain biliary constituents in the biliary ducts, or accumulating generally in the gall-bladder, as gall-stones, the passage of which through the duct into the duodenum gives rise to symptoms known as "gall-stone colic."

Treatment.—When the symptoms of gall-stone passing the duct are present, the curative indications are to facilitate its passage into the intestine, to relieve the intense pain which accompanies it, and to prevent that inflammation which the presence of an extraneous body of any magnitude is calculated to produce in the duct. The first thing to be done is to calm the sufferings of the patient. Half a grain of solid opium, or a quarter of a grain of morphine, or twelve drops of laudanum, or the mistura camphoræ, ʒ xj., conf. opii ʒ ss. to ℈ ij., c. sp. æth. nitr. ʒ j., should be given every hour, or every two hours, till some relief is obtained, or till there is slight narcotism. Similar doses may be repeated every four or six hours, till the pain has ceased. If the vomiting be severe, and the remedies be rejected, the opiate may be given hypodermically, commencing with not more than one-fourth of a grain of the muriate of morphia in solution, or opium may be administered by enemata of laudanum. Careful inhalation of chloroform, till anæsthesia is produced, also gives great relief, and is a valuable remedy when paroxysms are most violent. It not only calms pain, but may lead to the cessation of the spasmodic contraction of the biliary passages, and thus favor the expulsion of the calculus (Murchison). Chloroform also, when given internally, appears to exercise some influence as a solvent of biliary concretions. Dr. J. Barclay relates an instance in which m ii. to m iii. of chloroform, given three or four times a day, afforded great and immediate relief (*Brit. Med. Journal*, 1870). Dr. Murchison has seen marked benefit from the extract of belladonna, given in half grain doses every two or three hours. The hydrate of chloral, as it produces extreme muscular relaxation, is also a likely remedy. Small pieces of ice in the mouth may relieve vomiting. Emetics or laxatives are not to be given during the attack. A warm bath should be immediately prepared, with a temperature of 100° to 110°, or as hot as the patient can bear it, and the immersion should continue till he is in some degree exhausted. The intention of the bath is to relax by means of heat the muscular fibre of the ducts, and thus relieve the pain and facilitate the passage of the gall-stone. The effect is generally so agreeable to the feelings of the patient that, on the recurrence of the pain, he may ask for a repetition of it, and his wishes should be complied with. If a warm bath cannot be procured, fomentations, or a large linseed poultice, should be applied over the abdomen. Dry heat is always at hand, and hot flannels, hot sand, or hot chamomile

flowers afford some relief. Bleeding is not called for. The calculus having passed, and the patient being relieved, the secretions of the liver should be rendered more healthy. A course of neutral salts, or of the Cheltenham or Leamington waters, ought to be taken in this country. Under the use of the Karlsbad waters immense quantities of gall-stones are evacuated with proportionately little difficulty (Niemeyer). The same is true of other alkaline mineral waters, such as Vichy, Marienbad and Kissengen.

The radical treatment of biliary calculi ought to be attempted during the intervals between the attacks of gall-stone colic, by—(1.) Solvents believed to act on the calculi. These are,—(*a.*) Alkaline solvents, which are to be preferred above all others. Under their influence the calculi seem to be really dissolved or broken up, so as to disappear without leaving any trace; or they are expelled entire in abundant bilious evacuations. This alkaline treatment comprises the fixed alkalies, soap-lye, salts of soda, carbonate of ammonia; but especially the waters of Vichy, Vals, Karlsbad and Ems. These are used as drinks and as baths; and they must be employed perseveringly, at different periods, during several years in succession. (*b.*) Durande's remedy, which consists in the administration of half a drachm to a drachm every day, in the morning, of a mixture composed of fifteen grammes (*i. e.*, about ʒ iii.) of sulphuric ether, and ten grammes (*i. e.*, about ʒ ii.) of oil of turpentine, has enjoyed a reputation since 1790, as a solvent of biliary calculi. It has been extensively used and recommended by many Continental physicians. In this country Copland speaks favorably of it; but whatever virtue the remedy may possess as a solvent, it is probably due more to the ether than the turpentine, the former being a ready solvent of cholesterine (Waring). The dose is to be gradually increased till about a pound of this mixture has been taken. Its mode of action is not known; but where it has succeeded, the calculus has been expelled without being dissolved. It seems in some way efficient in promoting the expulsion of calculi, probably by its anti-spasmodic action, rather than acting as a solvent. Recently various substitutes have been proposed in place of Durande's remedy, and also variations from the original dose (Niemeyer). One is a popular remedy, a mixture of oil of turpentine, ℈ ii. with ʒ i. of spirits of sulphuric ether, which has been prescribed in drop doses by Rademacher. (*c.*) Diet has a great influence upon the quality of the bile. Fresh laxative vegetable food, grapes, fruits,

and whey ought to constitute the staple articles of a regulated diet. All fat should be as much as possible excluded from food, and the plainest diet, in the form of roasted meats or boiled meats, with vegetables and farinaceous food, should be rigidly proportioned to the wants of the system. The drinks should be water or lemonade, and an avoidance of alcoholic or malted stimulants. (2.) Treatment which seeks to assuage pain.—With this end in view, Lutten prescribes opium in larger doses than those already mentioned—namely, two and one-third to three grains of solid opium at once; but he considers the hypodermic injection of solution of morphia as preferable ("Nouveau Dictionaire de Medicine et de Chirurgie Practiques;" also, "Society Med. de Paris, 1866;" and "Sydenham Society's Biennial Retrospect for 1865–66"). The intense agony is more effectually relieved by large doses of opium than by any other remedy, particularly if it be combined with the use of the hot bath (Dr. Waring). Two grains of solid opium, or mxl. of the tincture of opium may be given, either by mouth or in the form of enema, to be repeated in half an hour if the pain is not relieved. It may also be advantageously combined with a full dose of ether or chloroform. care being taken in case of over-dosing with the opiate.

Large draughts of hot water, containing carbonate of soda in solution (℥ i. to ℥ ii. to twenty ounces of water) give more immediate relief than any other means (Dr. Prout). The first dose or two may be rejected; but the addition of a few drops of laudanum and steady perseverance in the remedy will eventually ensure its success (Murchison). No doubt can exist as to the efficacy of alkaline waters in removing the symptoms of gall-stones. It is certain that the salts of Vichy and Karlsbad waters relieve the symptoms of this affection, provided they are administered in hot water, and so as to represent nearly the strength of the natural springs.

Constipation.—*Definition.*—A retention of fæces beyond the usual period, so that when they are passed it is with difficulty, and in a comparatively hard indurated state.

Treatment.—There it no rule of health more important than that the bowels be kept regularly open. Enemata are of the first importance, and ought to be much more frequently employed than they are as a habit. They may be simply a pint of warm water 100° Fahr.; or the same quantity of warm

water, with half an ounce of common salt. The common soap enema (a strong solution of soap) is likewise a valuable remedy; and when the constipation is great, half a pint to a pint of castor-oil, neat, may be thrown up. For constipation in children and young persons nothing is so efficient as an enema of salt and water, repeated night and morning, or every night, or every other night only, according to the urgency of the symptoms. Large accumulations of scybala (stercoraceous tumors) seem visibly to melt away under their continuous influence. These enemata ought afterwards to be followed by one or two drachms of sulphate of magnesia, one grain of quinia sulphatis, in aromatic sulphuric acid in an ounce of infusion of gentian, every morning till the bowels assume a healthy tone. A soap suppository, *i.e.*, a piece of common yellow soap, shaped to an oval form, about half an inch thick at the middle part and an inch and a half long, introduced into the rectum, is also a useful stimulant to the action of a torpid rectum in children. When constipation is occasional and accidental, any of the milder cathartics, in the absence of an enema, as the sulphates of soda or of magnesia, castor-oil, rhubarb, aloes, or the confectio sennæ, or the pilulæ colocynthidis comp., will in general open the bowels. In obstinate constipation, tartrate of antimony, to the extent of one-fourth of a grain, combined with a drachm of sulphate of magnesia every hour, may often bring fæces away after nausea supervenes. If, however, the constipation is habitual, the healthy habit of a daily evacuation is not easy to be re-established. The remedies, though often successful, yet occasionally fail. In cases of habitual constipation, the combination of tonic with laxative will often produce a more efficient action than a perseverance in the use of purgative medicines alone. Thus, two grains of the ferri sulphatis, or an ounce and a half of the infusion of gentian, combined with one or two drachms of sulphate of magnesia, given according to the urgency of the case, three times a day, or every six hours, will empty the bowel when the salt alone will fail. In old persons, a combination of aromatics with the purgative, as in the decoctum aloes, is a more useful and effective remedy than the same or even a greater quantity of aloes alone. Aloes is a useful remedy when the colon seems specially at fault as a result of fever and debilitating diseases, or of sedentary habits and occupations. The watery extract, combined with essential oil of ginger and jalapin; or with quinia, extract of nux vomica, ipecacuanha, are the most useful combinations. Where slow

digestion, with a deficiency of mucous secretion prevails, the following is a formula for pills, of which one ought to be taken an hour before dinner (and before breakfast also) if required:

℞. Pulv. Ipecacuanha, gr. viii. to xii.; Ext. Aloe, gr. xii.; Sulphatis Ferri, gr. xviii. to xxiv. Misce, et divide in pil. xii.

Or, the ipecacuanha may be omitted; or the aloes may be combined only with some bitter extract, such as gentian. Such pills ought to be continued regularly till the occurrence of a "loose motion," after which one only, an hour before the principal meal, will be sufficient.

Another formula for a pill of a similar nature is of use in habitual constipation, namely:

℞. Pil. Rhei. Co., vel Pil. Coloc. Co., vel Aloe, gr. ii. to iii.; Pul. Capsici, gr. i. To be taken with the food, and repeated daily as occasion may require (Pavy).

Drastic purgatives ought never to be given. The diet ought to be especially attended to. More food, both solid and liquid, may require to be taken. When constipation is obstinate, and has resisted the stronger purgative remedies, a full dose of opium sometimes seems to relax the spasm of the muscular coat of the bowels, on which the constipation may depend. Belladonna also may be given with advantage, in doses of $\frac{1}{6}$ to $\frac{2}{3}$ of a grain every morning at rising, combined with the extract of gentian (Trousseau); or 10 minims of the tincture of belladonna may be similarly taken. All medicines for the relief of constipation ought to given just before or with food; and are to be regarded as acting with the food in bringing about the result. Pills or draughts at bedtime are not so useful. In the constipation of children the sulphate of potass is recommended alike by Drs. Hiller and West. The following are useful formulæ:

℞. Potas. Sulphatis, gr. xl.; Syrup Rhei. ℥ ss.; Aq. Carni Ad. ℥ iii.; Misce. Dose—A table-spoonful for a child six years of age (Hiller).

℞. Potas. Sulphatis, gr. xii.; Infus. Rhei. ℥ vss.; Tinct Aurant., ℥ ss.; Aq. Carni, ℥ ii.; Misce. Dose—A table-spoonful for a child three years of age (West).

A severe case of colic with constipation, in the practice of Dr. Murchison recovered under the use of one-half grain of the extract of belladonna every four hours, with belladonna ointment to the abdomen, a warm bath and castor oil enemeta (*Lancet*, Jan. 19, 1871). When constipation arises from torpor of the colon, equal parts of compound gamboge pill and the compound colocynth pill is recommended by the

late Dr. Symonds of Bristol ("Lib. of Medicine," Vol IV., p. 139). The compound extract of colocynth, or compound colocynth pill variously combined with small doses of blue pill, or with ipecacuanha, or with podophyllin, or with nux vomica, is a safe and useful form for the relief of the bowels. Colchicum (tincture of the root) has been found of service in doses of ten drops several times daily (Chapman). When constipation does not yield to the simple treatment which has been mentioned, recourse must be had to more active remedies. Thus calomel, gr. v.; c. jalapæ, gr. xv., is a dose which rarely fails to produce motions, and this if necessary, may be followed up four hours after, either by the neutral salts in divided doses, or by a black draught in one dose. If a stronger medicine than the above be necessary, elaterium is of greater power, and from $\frac{1}{16}$ to $\frac{1}{2}$ grain, combined with henbane, is sufficient to begin with, so as to avoid hypercatharsis. When the stools indicate a deficiency of bile, inspissated ox-gall has been recommended. It may be given in the following formula:

℞. Fel. Bov. Purificat., ʒ ii.; Ol. Carni, mx.; Magnes. Carb., q.s.; Misce. Divide in pil. xxxvi. Dose—Two to be taken daily (Waring); or,—

℞. Fel. Bov. Purificat., Pil. Asafœtid. Co., aa. gr. xxx.; Ex. Aloes, gr. xx.; Sapon. Dur. gr. x; Pulv. Ipecac., gr. viii.; Misce. Divide in Pil. xxx. Dose—One or two may be taken daily before dinner (Copland).

The resin of podophyllin, to the extent of $\frac{1}{6}$ to $\frac{1}{4}$ of a grain combined with compound rhubarb pill, acts similarly to the combination of rhubarb pill with calomel. A lengthened period sometimes elapses before it operates. The tincture of benzoin, to the extent of gtt. xx. three times a day, will, it is said, keep the bowels active and regular (Hastings, Streetan).

Sometimes the fæcal matter accumulated in the colon is so large in quantity, and so hard and impacted, that manual assistance is necessary to relieve the patient. Women sometimes suffer for years from constipated bowels; and a contrary state of the bowels may take place from the irritation of hardened fæces, when they are much harassed by purging, existing more or less for many months. At length a violent tenesmus comes on, with a bearing down most intolerable, much worse than a woman suffers in her confinements. On examining the rectum, a mass of hard matter may be found, which cannot be broken to pieces without

the aid of an instrument. This mass consists of a variety of undigested substances, which when broken down, may be washed away by injections, to the perfect relief of the patient.

Dietetic Treatment.—Patients suffering from constipation should avoid port wine or brandy, and should eat freely of sub-acid fruits, drink more water, and in some cases eat more food of a kind likely to stimulate the colon, such as bran bread; and oatmeal, in the form of cakes, or well-boiled porridge, should be eaten for breakfast. They should go daily at the same hour to stool; for such is the periodical regularity of all the functions of the body, that they are more readily performed at accustomed hours than irregularly.

Consumption—*See Phthisis.*

Convulsions, Infantile.—*Definition.*—Convulsive seizures, consisting of contraction of muscles by gradual but rapid shortening of the muscular fibres, causing such hardness and stiffness of the muscle or limb that it cannot be overcome. This period of tonic contraction is followed by clonic spasmodic phenomena, characterized by the occurrence of alternating movements of contraction and relaxation independent of the will, which is as powerless to suspend or moderate them as to excite them (Trousseau.)

Treatment.—Of all the causes mentioned in connection with convulsions, none are so common or universal as indigestion. Hence the quantity and quality of the food and condition of the evacuations, by vomiting or by stool, ought to be inquired into at the first. If some unwholesome diet has been given, a good purgative of calomel, mixed with powdered sugar, should be put on the back of the child's tongue. If indigestion is traced as the source of the fits in an infant or young child, a few drops of aromatic spirit of ammonia, or the same quantity of ether, may be given in a teaspoonful of water; or a drop or two of anise oil, rubbed up with sugar, may be given from time to time, by laying the powdered sugar so saturated on the tongue of the child. It is in such cases that mere flatus in the bowels may cause a fit in a predisposed child. The belly will be found tumid, when gentle friction over the abdomen (following the direction of the colon), combined with the warm bath and those soothing aromatics, will give relief.

The clothing must be loosened completely, so as to admit air freely, and anti-spmasmodics, such as ether alone, or com-

bined with musk or belladonna, may be given, till the progress, duration, seat, or probable cause of the convulsions may be ascertained. An emetic, a purgative enema, a searching purgative, such as calomel, combined with jalup or rhubarb, may be indicated; or the removal of a pin in the dress, which had been long pricking the skin, or too tight a dress, may, on removal or rectification, cause the convulsions to cease.

In all cases, however, when a child we have never seen before is found in a fit, it is best to order a warm bath to be prepared, and to have the room freely ventilated. The next points to inquire into are the condition of the pulse and of the child's head as to form and completion of its bones. "Pass one hand quietly and carefully over the child's head while the pulse is felt with the other. Fulness or weakness of the pulse will be a guide to diagnosis; so also if the head be hot or cold, if the anterior fontanelle be tense and protruding, or sunk and retracted, and if the face be flushed or pale" (Ellis, Diseases of Children).

When the child is completely stripped of its clothing, it should be observed if the legs are drawn upwards to its belly, and if so, and the head be hot, and the fontanelle prominent; there is congestion of the head, which may either be the cause or the consequence of the fits. In any case the child should be placed first with its feet in the bath, in which a handful of mustard may be mixed (two ounces of mustard to four gallons of water). At the same time vinegar and water, or spirits and water lotion, may be applied to the child's head; while hot flannel cloths wrung out of the hot mustard and water bath (with more mustard sprinkled on the surface of the flannel) should envelop each leg and foot. If the head be cold or the fontanelle depressed, the entire body of the child should be immersed in the mustard and water bath (temperature about 98° Fahr.); and friction employed over the whole skin. A little sal-volatile map be held to the nose, and a few drops of brandy in a teaspoonful of water may be used to moisten the lips. It is possible the child may be in a state of faint or syncope, and not in a fit.

During these proceedings it is important to find out the previous medical history of the child, as to,—(1.) Which of the acute specific diseases it may have had. (2.) State of dentition, and also condition of gums to be determined, by passing the finger along them. (3.) What the child may have been eating recently. (4.) The previous existence of diar-

rhœa. (5.) The previous occurrence of carpopedal twitchings, or drawing in of the hands and feet, with general irritability. If this latter condition is found to have existed, and if the fontanelle be prominent, there is some abnormal condition of the nervous system. A calomel purgative may be required, or leeches, or a rubefacient behind the ear or over the vertex. With headache, vomiting, and some feverishness, a pulse of 130 would rather point to stomachal disturbance; whereas with a slow pulse (say at 40), these symptoms would rather indicate an early manifestation of tubercular meningitis, where bromide of potassium or ammonium may be required after suitable purgation. If recently convalescent from scarlatina, and there be albuminuria or anasarca, a hydragogue cathartic may be required, in the form of twenty grains of compound jalap powder with a grain of scammony, to a child five years of age, repeated every two or three hours till the desired result is produced. It may be necessary at the same time to dry-cup the loins. If convulsions come on during hooping-cough, apply ice or cold to the head, with free purgation, and use a sedative cough mixture (Ellis, l. c., p.

A clyster of one part vinegar and three parts water, the application of cold compresses to the head, or of leeches behind the ear, if the convulsions do not subside, are remedies advocated by Niemeyer.

If symptoms denote stupor, cold affusion should be prescribed; if, on the other hand, they denote some collapse, wine, camphor, musk, and other stimulants must be used.

If dentition is causing the convulsions, the dense tissue of the gums over the tooth ought to be relieved by lancing it, or cutting it across over the crown of the tooth.

Dr. Tanner advises the administration of bromide of potassium as a medicine from which more may be hoped for than from any other. If there be inability to swallow, it ought to be given in enemata of beef-tea.

Where great restlessness prevails, dilute hydrocyanic acid, with tincture of hyoscyamus, may be given.

Compression of the carotid arteries and chloroform inhalation, or a mixture of ether and chloroform, are only to be had recourse to in cases of prolonged duration, depending on such irritation as that of dentition. Anæsthesia thus induced is of great value.

Trousseau is strongly opposed to blisters and general "revulsions to the skin," except in some cases of "inward fits"

involving the diaphragm or the heart. In such cases the action of the remedy, as ammonia, must be immediate.

Convulsions, Puerperal—*Definition.*—An acute affection of the nervous system, characterized by loss of consciousness and sensibility, by tonic and by clonic spasms. It occurs only as an accessory phenomenon of another disease (generally Bright's, in an acute form) which, under certain circumstances, spreading its toxæmic effects on the nutrition of the brain and the whole nervous system, gives rise to convulsions. The blood-poisoning is generally to be referred to anæmia, or to the products of the changes in urea which are retained in the blood, or to the retention of other excrementitious constituents of the urine (Braun).

Treatment.—If œdema with albuminuria and tube casts in the urine are observed during the course of pregnancy, the morbid condition may be kept in check, and the extension of the disease may be prevented by hygienic management and medicinal remedies. The watery and otherwise deteriorated condition of the blood is to be ameliorated by a liberal and properly assorted dietary, and by ferruginous tonics; and a good general effect is often produced by the use of tepid and vapor baths (Caxeaux, Leishman). It has also been suggested by Frierichs that tartaric acid, benzoic acid, or lemon juice should be regularly given, with the idea that these will prevent decomposition of the urea in the blood, or neutralize the carbonate of ammonia already formed. The functions of the bowels must be regulated with care. Purgation as a prophylactic must be resorted to with caution. Compound jalap powder, in electuary, with or without guaiacum, are the most efficient and least depressing medicines for this purpose. The quantity and the micoscopic appearances of the urine furnish the best indications as to the necessity for the use of diuretics. When exudation has taken place into the Malpighian capsules and the tubes, it is desirable to clear them of the obstruction, and prevent its reformation. The copious use of diluents may effect this desirable result. But if the secretion of urine be scanty, and uræmic intoxication threaten to come on, the secretion of urine must be increased. The acids already named, and the mineral waters of Seltzer and Vichy, are the remedies best adapted for this purpose (Braun, Leishman). I find also frequently repeated small doses of bicarbonate of soda combined with spirits of nitrous ether in large quantities of cold

barley water, an efficient diuretic in such circumstances. Pills of tannin and extract of aloes may be used for restoring the normal tone. Labor should only be provoked when the symptoms are such that the life of the mother is in danger (Braun, Leishman).

In the treatment of the fits, procedure is different according as they happen during pregnancy, during labour, or after delivery. During the paroxysm, the indications are the same in all cases. As to blood-letting, there are certain cases in which the constitution and temperament of the woman, the violence of the attack, combined with evidence of vascular tension within the cranium (such as throbbing carotids, marked suffusion of the eyes and face), warrant us in believing that by venesection we give the patient the best chance of recovery, or in such cases leeches may be freely applied to the temples and ice to the head. In cases which do not present these indications for blood-letting, the administration of chloroform, ether, and other anæsthetic agents, produces a beneficial effect. Symptoms which suggest the approach of a first seizure, or a repeated paroxysm, are a sufficient warrant to adopt this method of treatment. It is the premonitory symptoms which must be held in control by anæsthetics,—their use is too late when the respiration is impeded. Chloral hydrate has also been strongly recommended, and it has this further advantage, that "when it is pushed further it produces an anæsthetic effect, under the influence of which a woman may be delivered without experiencing the slightest suffering" (Leishman). In ordinary sedative doses—not more than thirty grains—its effect is safe, and in most cases efficacious; but if larger and repeated doses are required, its cumulative action is such that very alarming symptoms are occasionally produced, and death has even been the result of what might be considered quite an ordinary dose. Four drachms have been administered by enema within three days. Sponging with warm water, or tepid vinegar and water, has been found useful. Opium is not to be administered in cases where albuminuria is present. (For obstetric details, see Leishman's "System of Midwifery," 3d Edition, p. 776.)

Coup de Soleil—*See Sunstroke.*

Cretinism:—*Definition.*—A condition of imperfect development and deformity of the whole body, especially of the head. It is endemic in the valleys of certain mountainous

districts, and is attended by feebleness or absence of the mental faculties, and sometimes of the special senses. It is often associated with goitre.

Treatment.—The indications of treatment are those which suggest improvement in all hygienic measures for the prevention of the disease. Dr. Gubbenbuhl, of Zurich, was the first to recognize the fact that the mental state of cretins could be improved by improving the growth and condition of the body. In 1842 he succeeded in buying the mountain of Abendberg, which incloses the plain of Interlaken, and there he established an hospital for these unfortunate children. The infant cretins, removed from the low close valleys (in which the malady too often finds the circumstances most congenial for its development), are there fed and trained in "the free, dry, cool, and bracing air of the open but sheltered and sunny slopes of the Abendberg." Once established, the condition of the cretin can only be ameliorated by institutions similar to those founded by Dr. Guggenbuhl. The condition is beyond medicinal remedies.

Croup.—*Definition.*—A "non-infectious inflammation of the mucous membrane of the trachea, occurring in children, differing from other inflammations in like tissue in the presence of plastic exudation" (Barclay); or it is a disease accompanied by the exudation of a fibrino-albuminous material which rapidly coagulates upon the mucous membrane of the epiglottis, glottis, larynx, or trachea, and sometimes over all of these parts; indicated by accelerated, difficult, wheezing, or shrill respiration; short, dry, constant, barking cough, voice altered by hoarseness, with spasm of the interior laryngeal muscles, and pain and constriction above the sternum, frequently followed, towards the close of the disease, by expectoration of a membranous albuminous substance, or even of a cylindrical cast of some portion of the breathing tube. The disease occurs in children, and may terminate fatally, either in suffocation or exhaustion of the vital powers.

Treatment.—Every case of croup demands the most active, efficient, and energetic treatment. Great and diametrical as are the pathological differences of croup and diphtheria, the treatment most effectual in either is not the less decided and opposite. While calomel in purgative doses, tartar emetic, and blood-letting may each and all of them be demanded in croup, these agents would be most baneful in diphtheria, which is most successfully combated by the administration of the mineral acids (especially the nitric and hydrochloric),

chlorate of potash, quinine, and iron (See *Diphtheria*). Bleeding, especially local, should be employed in most cases to a considerable extent (an ounce of blood for every year of age); and two to twelve leeches, according to the age of the patient, should be applied over the trachea and larynx. The bleeding should be encouraged by the application of a linseed poultice to the throat. This first bleeding often gives great relief, and sometimes averts the danger. If not, the leeching after a few hours may be repeated. As soon as some relief is obtained, a blister should be applied along the lateral aspect of the neck on each side, and not over the trachea. The blistered surface should be dressed with mercurial ointment. Many practitioners prescribe emetics also; first, because their emetic effects, and the large evacuations they produce, favor the resolution of the inflammation; and second, because the effort of vomiting may be the means of detaching and of expelling the false membrane, should it have formed. So soon as croupy cough and dyspnœa occur, an emetic of ipecacuanha with tartar emetic ought at once to be given in doses suited to age. Four to six grains of ipecacuanha, combined with a quarter or a third of a grain of tartar emetic, will be sufficient for a child of two or three years of age. The action of the emetic may be aided by a warm bath of 98° to 100° Fahr. If it becomes obvious that the exudation has assumed the form of a membrane, especially if indicated by a diphtheritic coating over the fauces, a solution of the nitrate of silver, varying in strength from forty to one hundred and twenty grains to the fluid ounce of distilled water, should be applied to as much of the fauces and larynx as can be reached. A sponge on the end of a piece of whalebone should be loaded with the weaker solution, and squeezed against the *rima glottidis* two or three times a day. Bleeding has no effect in removing or modifying the false membrane; but the system must be brought as speedily as possible under the influence of mercury. Two, three, or four grains of calomel, with two or three grains of James's powder, may be given at short intervals every two or three hours; and a dose of castor-oil occasionally, till the full effect of the calomel as a purgative is obtained. Green fæcal stools, like chopped spinach, are characteristic of this result. Mercury appears a powerful resource in these cases; and, introduced either internally or by inunction, so as to affect the mouth, but without inducing salivation, uniformly gives relief as soon as its constitutional action is established.

Bleeding, blistering, and mercury, although the rule of treatment in idiopathic infantine croup, are, for the most part, entirely inefficient in those cases in which the affection begins in the fauces, as in the case of many epidemics, especially after scarlatina, which are really cases of diphtheria. Expectorant medicines should be given with the mercurials, and be continued after them. Ipecacuanha and senega are most efficient.

Tracheotomy, when not too long delayed, has saved many a life in croup, while it has proved utterly abortive in diphtheria, which is beyond the reach of any such topical remedy. M. Trousseau has saved one-third of his patients by its means; and of twenty cases Bretonneau saved six. Perhaps the experience of the profession generally is somewhat discordant on this point at present. Those who operate early save some of their patients, while those who wait till a case is advanced, and beyond medical treatment, before they resort to this measure, for the most part lose all their patients. The evidence, however, is daily accumulating which shows that tracheotomy ought to be resorted to much oftener as a remedy for croup than it has hitherto been, and that at a much earlier period in the disease,—not as a last resource, when death from asphyxia appears imminent, and after treatment of the most depressing kind. That this is the secret of success in France and in this country, is shown by the experience of able physicians and good surgeons, of whom the names of M. Trousseau, the late Mr. Jones, of Jersey, Mr. Henry Smith and Dr. Fuller, of London, the late Dr. Cruickshank, of Dalmellington, in Scotland, and Mr. Spence, Professor of Surgery in the University of Edinburgh, Dr. George Buchanan, in Glasgow, and Professor Roser, of Tubingen, may be stated as authorities by experience. In country districts the performance of trachectomy in a case of croup is almost imperatively called for in the majority of cases, if some symptoms of amelioration do not follow the steady use of bleeding, emetics, the warm bath, and calomel purgation, pursued for twelve or sixteen hours. I know from personal knowledge in a wild country district of Scotland, where croup was very common and fatal, that the late Dr. Cruickshank saved eight out of eleven cases during two years. A valuable paper by Mr. Smith, in *The Medical Times and Gazette*, January 26, 1856; another by the late Mr. Jones, of Jersey, in the 8th November of that year; and, lastly, a paper by Dr. Conway Evans, in the *The Edin-*

burgh Medical Journal for January and May, 1860, go to support the same conclusion,—namely that an earlier introduction of air, by the operation of tracheotomy, for croup, would not only give a larger percentage of recoveries in this country, but would place the operation in the same favorable light in which it is now regarded in Paris and other parts of France. Tracheotomy in croup is undoubtedly gaining ground; and it cannot be denied that children perish, in the first instance, almost always from suffocation. Tracheotomy is therefore indicated in croup as soon as there are urgent symptoms of obstruction of the glottis. When the respiration is so impeded that the demand for oxygen is only satisfied by difficult forced respirations, dreadful anguish is depicted on the reddened countenance covered with sweat; there is extreme restlessness; the patient tosses from side to side, gets out of bed one minute and into it the next, clutching spasmodically at those around him, as if seeking everywhere for help. This is the proper period for the operation of tracheotomy in croup,—the time when success may be expected (Roser). Should the operation be longer delayed, symptoms of asyhyxia appear, overloading of the blood with carbon ensues, the face suddenly becomes blue, with fixed and staring eyes, convulsive exertions are made, and anxious struggles for breath follow the stage of suffocative agony. In some cases the symptoms of asphyxia come on more slowly, and are apt to make considerable progress before the danger is fully appreciated. This insidious form of asphyxia is denoted by symptoms of great weariness and weakness, restlessness, oppression, anxious startings out of short slumbers, loss of consciousness and of feeling, approaching stupor, the face pale, and tending to become œdematous. If tracheotomy is delayed till these symptoms become expressed, it may still enable the child to breathe more freely, and thereby may promote the chances of recovery; but the child has usually no longer power to resist the advancing bronchitis. The causes of death after the operation are mainly pneumonia, bronchitis, or the severity of the constitutional febrile state (Syden. Society Year-Book, 1863, p. 278). In diphtheria the fatal result depends on a cause acting generally on the system, which ultimately destroys the patient, and which tracheotomy will not prevent. Age influences success to a considerable extent. Under two years of age few cases recover; but between the ages of six and twelve nearly one-half are saved (Conway Evans).

Croup, Spasmodic—*See Laryngismus Stridulus.*

Cyanosis.—*Definition.*—A peculiar blue condition of the skin, symptomatic of various malformations or derangements of the heart and great vessels, so that a small portion only of the blood is subjected to aëration in the lungs.

Treatment must depend upon the nature of the lesion or disease which gives rise to the cyanosis. The inhalation of oxygen gas has given relief in some cases.

Cynanche Tonsillaris—*See Quinsy.*

Cystitis.—*Definition.*—Inflammation of the urinary bladder.

Treatment.—The causes must, if possible, be removed. Purging, together with opiates, diluents, and the warm bath, are the best means of curing the acute affections. Chronic inflammation of the bladder, and especially catarrh, is very difficult of cure, and often our best directed efforts are unsuccessful. Opium is the remedy of the greatest value, especially aided by hot hip-baths, hot fomentations over the abdomen, and linseed-meal poultices, with or without mustard or turpentine, over the hypogastric region. Suppositories of morphia are of great use, containing half a grain to a grain of opium; but if the pain be very great, much larger doses may be given—as much as two to four grains of opium, with ten to fifteen grains of extract of hyoscyamus, in a suppository, at the hour of sleep. Alkaline and demulcent drinks should be at the same time given. The state of the urine is one of the surest guides in our attempts to cure the patient. If the urine be acid, the best medicines are the neutral salts or the pure alkalies, with opiates; while, if the urine be alkaline, or greatly loaded with mucus, the mineral acids are of the most service, combined with an opiate. Thus the infusio rosæ c. acidi sulph. dilut. mij. to v., c. magnesiæ sulphatis, ʒ j., c. tinct opii, miij. to v., every sixth hour, is one of our best and most useful remedies. Tonics often succeed when other remedies fail, and of these salicine is one of the best. It may be given in doses of ten grains every six hours. It must be admitted that much difference of opinion prevails as to the best tonic remedy, some preferring uva ursi, others pareira, others the turpentines, as the Canadian balsam, and others again the infusio diosmæ. In chronic catarrh, when the discharge is copious, the decoction of uva ursi, in doses of not less than half a pint daily, is very soothing. It is of most advantage in cases of irritability

rather than of inflammation, prescribed in large doses, from one to two drachms of the extract daily, or from eight to sixteen ounces of the infusion as a drink, made as follows:—

℞. Fol. uvæ ursi, ℥ i.; Aq. Fervid., f ℥ xviii. Macerate for two hours, and boil down to 16 ounces, and strain (Sir Benjamin Brodie).

Delirium Tremens—*See Alcoholism.*

Dengue.—*Definition.*—A specific continued fever or febricula, eminently contagious, and having an incubation-period of a few hours to one to seven days (Charles), characterized by frontal headache, by severe pains in the limbs and trunk, and sometimes by an eruption, resembling that of measles, over the body. The disease occurs chiefly in the West Indies.

Treatment.—Time is an essential element in the treatment. Emetics and purgation may be given if indicated. Calumba and rhubarb with soda form a useful alterative medicine. Emetics of tartrate of antimony and ipecacuanha bring away large quantities of bile, relieving the pains of the head and limbs almost immediately; and the eliminative action ought afterwards to be maintained by sulphate of magnesia and tartar emetic. It may be necessary to repeat the emetic till bile is discharged from the stomach. Dr. Charles' experience leads him to say that most patients get on better without any emetic, which ought only to be given where the tongue is much loaded and where there is gastric derangement and nausea. Colchicum, sweet spirits of nitre, nitrate of potash, and antimony, in proportions sufficient for diaphoresis, given every two hours, with an additional effervescing draught, exercise a beneficial influence on the pains. After the acute symptoms subside, forty to sixty drops of the wine of colchicum, with twenty-five drops of laudanum, to which thirty drops of antimonial wine may be added, always ensure a good night's rest. Dr. Christie treated his cases by purgation during the first day, and in other respects as he would a case of malarious fever, by five-grain doses of quinine. When the febrile symptoms subsided iodide of potassium, in four-grain doses, was given, and continued during the remission, and for a few days after desquamation of the cuticle had taken place. Dr. Charles considers purgation ought not to be used in dengue, as it adds to the tortures of the disease and is too lowering. He considers bella-

donna a sovereign remedy in the pains of dengue, and prescribes it thus,—To one drachm of the tincture of belladonna he adds five drachms of orange syrup, and directs a sixth part to be taken every hour by an adult till the third dose is given, which may give so marked relief that no more need be taken. Less than three such doses seldom is sufficient, and in very severe pains two or three doses may be given in one. One-third to half grain doses of the extract, repeated twice or thrice in the twenty-four hours, will also generally suffice. Atropia may be used hypodermically in solution of one grain of the sulphate to an ounce of water; of which 8 minims are sufficient for most cases, while 10 minims (containing $\frac{1}{48}$ of a grain) is a full dose for a powerful, well-developed adult. Such a dose must not be exceeded in any case; and atropia is only to be used thus to afford rapid relief when pain is very intense, and has lasted for some time. Five minims of the solution is enough for a child of twelve years (containing $\frac{1}{96}$ of a grain). Cold water in the form of cold sponging has been found of great service in the hyperpyrexia of dengue; and the cold bath is worthy of consideration.

Diabetes Mellitus.—*Definition.*—A constitutional disease produced through errors in the processes of assimilation either in the stomach, in the solid organs, or in the blood, and characterized especially by an excessive thirst, an excessive discharge of urine, more or less constantly saccharine, to an extent of over 10 grammes (154 grains) of sugar per litre (35·3 ounces) of urine (Lasèque), and associated with progressive emaciation of the body, often ending suddenly by coma from acetonæmia or by convulsions.

Treatment.—There are few diseases in which the treatment has been more varied than in diabetes mellitus. Every conceivable medicine has been given, but exact determinations of their effects on the sugar have rarely been made. The emaciated state of the patient presents an insurmountable obstacle to bleeding. Nevertheless, this mode of treatment has often been practised: but the pathology of diabetes, as given in the text, does not sanction general bloodletting as a mode of cure.

Mercury alike with lead, antimony, zinc, silver, and copper, are indifferent as to their influence on the formation of sugar (Parkes). Opium has been given to the extent of 100 grains in the twenty-four hours; but with an equal want of success, although it does seem to lessen the sugar, probably by lessening the appetite and hindering the taking of food

(Parkes). Nevertheless opium and its preparations, especially codeia, have among all known remedies the most decisive influence on the excretion of sugar; but the duration of the action is only exceptionally an enduring one (Seegen). The whole materia medica has been exhausted in search of a remedy for this disease. The metals, the fixed and the volatile alkalies, the vegetable and mineral acids, the astringents, purgatives, tonics, diaphoretics, and diuretics, have each in their turn been administered, and each has perhaps afforded some relief; but the disease has proceeded, and finally, it may be said, nearly every patient dies whose treatment is left entirely to drugs. Dr. Prout, who considered diabetes merely as a form of dyspepsia, conceived that each case requires a special treatment. In the early stages of the disease some have found great benefit from the tincture of the muriate of iron, now called the tincture of the perchloride of iron. Dr. Camplin speaks of the citrate of ammonia in the effervescent form, generally combined with the citrate of iron as more useful than any other medicine; while bitters and alkaline remedies did him great service at one period of his attack. Amongst remedies, alkalies, as recommended by Miahle and Contour, and mineral waters have proved themselves the best. The use of Carlsbad water has always a favorable influence, the amount and duration of the influence varying with the severity of the disease (Seegen). The quantity of sugar in diabetes decreases under the use of alkalies, and at the same time the patient is better nourished. This action of the alkalies depends probably upon an increased oxidation of the hydrates of carbon in the blood of the non-muscular tissues, by which partly the want of oxygen in the muscles may be compensated. If the unknown cause cannot be removed, in consequence of which the muscles cease to decompose sugar, there are no remedies by which we might decompose the sugar in a diabetic diseased organism. But we may partly supply, in the blood of diabetic patients, what is wanted. Besides alkalies, we may use paralactic acid; and as glycerine acts in a similar manner as paralactic acid,—*i. e.*, is easily consumed in the blood—it deserves to be taken into consideration in such cases. It has been given with benefit to the extent of six to eight drachms daily; and its administration should be continued uninterruptedly for at least one month. In place of paralactic acid, there may be used lactic acid, as it is also consumed in the blood.

Opium, combined with ipecacuanha, is eminently useful as a sedative, especially in the form of Dover's powder; while exercise, warm clothing, friction of the surface, hot bathing, and diaphoretics, improve the cutaneous functions. The functions of the skin must always be inquired into, and must be kept active. The nitro-muriatic acid baths, and the internal administration of the acid, might also be employed with some prospect of benefit in cases requiring acid tonics. This is more generally the case in the young, and in the early stages of the disease, in which the tincture of the perchloride of iron is also of service, prescribed in the infusion of quassia or of calumba. But each case requires to be made a special study, considering that many, or at least several, organs are concerned in the disorded working of the system (Prout, Camplin). The mistura ferri composita is another of the iron preparations which has been found of service. With the view of diminishing the morbid ferment in the stomach, Drs. W. Ebstein and Julius Muller, of Breslau, have prescribed carbolic acid with advantage. It was given dissolved in peppermint water (the strength being 1 gramme to 300 grammes), about six to seven tablespoonfuls of this solution being taken in a day. It has also been found of use in the treatment of the acetonæmia (B. Foster). One to three grains may be given in glycerine or in a pill, twice or thrice a day. Valerian has also been found of use in diminishing the excretion of urea (Bouchardat), and so lessening thirst. He gives it in repeated small doses, and gradually increases the amount taken until he has, in some cases, reached a dose of 30 grammes (450 grains) in twenty-four hours (*Med. Times and Gazette*, Vol I., p. 568). With regard to the acetonæmia, transfusion has failed in this country and abroad. So also has the injection of a saline solution into the blood, as practised by Drs. E. H. Fagge and F. Taylor, of Guy's Hospital (*Guy's Hosp. Report*, XIX., p. 173 and 521). Salicylic acid and its salts are also worthy of trial, so is thymol (B. Foster, Burdon Sanderson). In the severe form of cardialgia, I have found great benefit to result from the use of Seller's Bismuth Mixture, prepared by Messrs. Mackay, Sellers & Co., 1 and 2 Bouverie street, London, in half-drachm doses, mixed with water, three or four times a day. Dr. Garrod writes favorably of the sulphide of ammonium as useful, in so far as it controls the morbid appetite; and Dr. S. Ringer finds sulphide of calcium of use. In the affections of the genitals in the female, I have found

the intense pruritus to be best relieved by bathing in solution of Condy's fluid (permanganate of potash) in copious and frequent ablutions, or by vaginal injections without soap. Winckel has found a solution of one part of salicylic acid in 300 of water; but glycerole of lead, zinc ointment, white precipitate ointment, glycerine and tannin, sitz baths with bran, carbolic acid solution (1 grain to 4 ounces of water as a vaginal injection, or 5 grains to the ounce as a lotion), may each in their turn be of use in relieving these most distressing of the symptoms and complications of diabetes.

The little benefit derived from medicine induced Dr. Rollo to try the effects of an entirely azoted or animal diet; and now it is found that the regulation of the diet is of the first and primest importance in the treatment of diabetes. A full and generous diet is unquestionably useful; but the patient soon gets disgusted with mutton or beef, or both, for breakfast, dinner, and supper: he consequently nauseates a meat diet, and abandons it altogether. A diet of salt fish has been attempted, but the patient in a short time so loathes it that it has to be given up. A mixed diet, therefore, if contraindicated by some theories, is at least the best to adopt in practice, if duly regulated and aided by other means. It will be evident, however, that those vegetables which contain a large quantity of saccharine matter should be avoided, as potatoes, grapes, or other very ripe fruit, and *a fortiori*, sugar itself.

"However surely an exclusive animal diet may lessen or entirely remove, the sugar in the urine of a diabetic patient, it is certain that it cannot long be tolerated." In this opinion Niemeyer, Trousseau, and many other physicians now concur: "Under its use the appetite fails, and a loathing of all food soon happens. The necessity of a mixed diet for man is as necessary for him when suffering from diabetes as in a state of health. In this disease the nervous system is undoubtedly implicated, and a rigid adherence to animal food alone, were it practicable, would soon be followed by an aggravation of the nervous troubles. There is, from the very beginning, and throughout the course of the disorder, a strong tendency to devitalization, and this too must be guarded against. Fortunately the sugar in the urine may be kept down, and at the same time the general strength of the system maintained, by a properly adjusted diet of mixed food. Along, then, with the carnivorous dietary, whose im-

portance is not to be undervalued, certain vegetables may be permitted, not only with impunity, but with advantage. These are, cabbage, cauliflowers, onions, spinach, watercress, sorrel, endive, lettuce, &c. Trousseau has found no ill consequences from eating acid fruits, as strawberries, gooseberries, cherries, and he has allowed apples, pears and grapes. He even suffers his diabetic patients to eat a small quantity of bread, if they greatly crave for it. As he remarks, there are many persons who are unable to make a meal without it. Such a regimen is more likely to keep the disease stationary, and secure the general comfort of the patient, by upholding his strength, than by confining him to one kind of diet, which his stomach soon revolts against, and which must result in innutrition, general debility, the development of intercurrent affections, and sooner or later death. Enforced daily exercise in the open air, when possible, just short of fatigue, is as of much importance in the treatment of diabetes as diet. In Professor Bouchardat's estimation exercise is the most efficacious of agents. Gymnastics should be practiced. Trousseau says that he has repeatedly seen, during the hunting season, diabetic patients, abroad with their gun and dog, cease both to drink and urinate to excess, and regain their strength, and even their virile powers. A suit of flannel or buckskin should be worn next the skin. Warm alkaline baths should be frequently taken, and an occasional Turkish bath will be found serviceable, if it produces no disposition to boils; or daily packing with the wet sheet may be tried, carefully watching the effects. The whole body should be hand-rubbed daily. Cream, so long as it agrees, may be permitted, and cod-liver oil is in many cases well borne, and would seem, as a nourisher, to do good. The benefit of small doses of the alkalies, not continued longer than a week or ten days at a time, is incontestable. They are the best given in the form of Vichy, Marienbad Kreutzbrun, or Carlsbad Sproudel water. Legroux thought he derived benefit from the administration of arsenic. Dr. Richardson, of London, has recommended the respiration of oxygen, and Bérenger-Féraud has shown that during its use there is great diminution in the amount of sugar in the urine (*Bul. de Ther.*, t. lxvii). The ethereal solution of the peroxide of hydrogen (ozonic ether) has been given with asserted benefit in half-drachm doses in an ounce of distilled water. Dr. T. K. Chambers has prescribed iodide of potash on purely empirical grounds. The preparations of iron are

indispensable, and should be varied from time to time. To lessen the thirst and craving for food, small doses of opium are useful. By the use of the mixed diet recommended, particularly if fatty articles can be taken, the obstinate constipation, so common in the earlier stages of the disorder, may be obviated without a recourse to drugs. Should this not be the case, castor-oil in capsules, or rhubarb and podophyllin, must be prescribed.

"This mode of treatment, which secures a proper but varied diet, one that will not disgust the patient, but will nourish his body, though it may not remove the symptom glycosuria, will, in a large number of cases, give the diabetic a fair share of conditional health; so that, as Dr. Trousseau remarks, he would not know he had sugar in his urine, if an occasional chemical analysis did not remind him of its presence." (Dr. Clymer's American edition).

Nevertheless, there are, as Dr. Camplin justly observed, 'certain fixed broad principles upon which the disease is to be treated." In all cases the various influences of the stomach, liver, skin, and kidneys on the nervous system and on each other, ought to be sought out and determined, and the basis of treatment arranged accordingly. It is necessary to abstain from all amylaceous food, as well as from every solid and liquid containing sugar, or any substance readily convertible into sugar. Fat meat and eggs may be taken, if biliary derangement is not induced by them, and fish is a most important article with which to vary the monotony of the dietary. Milk may also be indulged in occasionally, as it is not found that the sugar it contains is readily converted into glucose. Its influence, however, requires watching. The name of Dr. Donkin is associated with a special treatment of this disease in the use of skim-milk as the sole and only diet. He shows that in accordance with the teachings of chemistry and physiology we ought to expect advantageous results from it. Dr. Donkin contends that milk-sugar differs so essentially from cane sugar, grape sugar, and pure diabetic sugar, that it is not converted into it, and does not appear again in that form in the renal excretion. "Belonging to a different class of sugars, milk-sugar does not undergo alcoholic fermentation in contact with yeast; and, in addition, it does not precipitate the oxide of copper when treated with the reduction test. On the other hand, it is subject to lactic fermentation by the action of ferments. On account of these intrinsic differences, lactose, as an ingredient of

milk, cannot undergo the same metamorphic changes as glucose in the processes of digestion, and assimilation in health (nor be converted into it in diabetes); its conversion into lactic acid being direct and immediate, not by intermediate changes, through which the latter pass into this substance. For this reason milk-sugar, unlike vegetable glucose, is assimilated. It is necessary to notice, however, that milk-sugar, in the presence of acetic acid and some other vegetable acids, and of several mineral acids and other substances, was long ago observed by Simon to be changed into grape-sugar, and so became liable to alcoholic fermentation, and hence presumably as injurious to the diabetic as glucose. Hence milk-sugar may be thus perverted and rendered poisonous by admixture with other articles in the stomach, whereas taken quite alone, it may be the best of foods to the hungry patient. It is not, then, considered to be a fair trial of Dr. Donkin's skim-milk treatment, if any other food be allowed to mix with it in the stomach. It must be made the exclusive article of diet. The use of lactic acid by Professor Cantani, Dr. Balfour, Dr. Foster, and Dr. Ogle, is quite distinct from the treatment recommended by Dr. Donkin. They prescribed lactic acid as a remedy intended to make other foods wholesome; he prescribed skim-milk as a sole nutriment, which the mixture of other foods nullifies. As to the quantity demanded, it appears that a patient can drink as much as a gallon and a half *per diem*: but that is an extreme ration; and when the appetite is so keen, Dr. Donkin advises some of the milk to be made into curd or "junkets." But much less than a gallon and a half will suffice, for much less will supply the calculated daily wants of the digestive organs. Each pint of skim-milk contains half its weight of casein in a fluid state, which, in fact, is liquid bodily tissue. There is 72 per cent. of water in combination with it, and there is 72 per cent. of water in the primest beef. Thus, in five pints of skim-milk a man would get as much nutriment as in 3½ lbs. of beef-steak, which, in an exclusively meat diet, may be reckoned sufficient even to do a day's work upon. Dr. Donkin has, no doubt, made out a case for at least a temporary trial of this remedy in all but exceptional instances of diabetes. But the treatment must be commenced in the earliest stages. I have not found it of any use when the disease is persistently established.

It is desirable to vary the food as much as possible dur-

ing the day, taking the lighter kinds in the later meals. When soups are taken, they ought to be really good, and flavored with aromatics or onions, to the exclusion of carrots, turnips, and peas. They may be thickened with some bran finely powdered. Lettuces Dr. Camplin found to agree well, when eaten sparingly with oil and vinegar, or with a little salt only, if the vinegar is likely to disagree. Pickles in small quantities may be permitted to convalescents. If cocoa agree, it may be taken, prepared from the nibs only. With regard to drinks: if milk is found to agree, it may be used as a drink combined with half its bulk of lime-water or soda-water, or in the form of what is known as "buttermilk" in Scotland and in Ireland, but which in England is generally given to pigs, not yet being sufficiently appreciated by natives south of the Tweed. Dr. Camplin eventually found it necessary to abstain from all alcoholic drinks; but, where they are found desirable or necessary, a selection may be made from those wines and spirits which are freest from sugars. Of these, clarets may be chemically considered the best, then Burgundy. The so-called "fruity wines" must be entirely interdicted; and of all alcoholic beverages weak brandy and water is the safest. The amount of brandy must be always measured, and taken as directed by the medical attendant. From a teaspoonful to a tablespoonful in a tumblerful of water is generally sufficient for an ordinary dinner drink; and Dr. Camplin candidly and feelingly observes, from his own experience, that no diabetic need expect to recover or continue well who cannot exercise self-control, and make up his mind to be temperate in all things. Seeing that under this system of diet the patient is deprived of the use of ordinary bread, Dr. Camplin devised a form of bread prepared solely from bran; and the great value of bran cakes as a substitute for bread in cases of diabetes has now been established by the experience of so many individuals that its use ought to be insisted on. The bran used should be thoroughly washed, so that it may be free from starch as possible, and finely powdered, so that it may not irritate the susceptible mucous membrane of the intestines. Such carefully-prepared and finely-powdered bran may be obtained from Mr. Batchley, of 362 Oxford Street, London, near the Pantheon; also of Mr. Donges, Gower Street, London, North. But if it is desirable to prepare the powder at home as it is required, a special mill and sieve for the purpose are necessary, and may be obtained of Messrs. Evans Brothers, 54 Brick-

lane, Spitalfields, London, E. (Dr. Camplin's* "Monograph on Diabetes.")

Consistently with the experiments of Bernard, "cod-liver oil holds out some prospects of a natural plan of treatment by its use." Dr. Pavy recommends ground almond powder, made into biscuits, rusks, and bread, with eggs, as a substitute for ordinary bread. Mr. Hill, 60 Bishopsgate Street, London, makes such biscuits.

An abstinence from water lessens the formation of sugar; but it probably accumulates in the body, so that when fluid is again given, an excessive elimination of sugar occurs (Ringer, Griesinger); and patients become extremely depressed and ill if water is withheld from them, probably from the impregnation of the body with sugar (Parkes). Coffee lessens the sugar, but increases the urea. Rennet, as recommended by Dr. Gray, of Glasgow, at first lessens the sugar and water; but they afterwards increase again. Warm baths lessen the amount slightly. When the diabetic symptoms

* The formula for bran cakes is thus given by him:—"Take a quantity of wheat bran (say a quart). Boil it in two successive waters for a quarter of an hour, each time straining it through a sieve; wash it well with cold water on the sieve, until the water runs off perfectly clear. Squeeze the washed bran in a cloth, as dry as possible, then spread it thinly on a dish, and place it in a slow oven. When it is perfectly dry and crisp it is fit for grinding into fine powder. The bran thus prepared is ground in the mill for the purpose, and must be sifted through a wire sieve of such fineness as to require the use of a brush to pass it through, and what remains on the sieve must be reground till it is sufficiently soft and fine. To prepare a cake, take of this bran powder three or four ounces, three new-laid eggs, one and a half or two ounces of butter, and about half a pint of milk. Mix the eggs with a little of the milk, and warm the butter with the remainder of the milk; stir the whole well together, adding a little nutmeg and ginger, or any other spice that may be agreeable. Bake in small tins (patty-pans, which must be well buttered), in a rather quick oven, for about half an hour. The cakes when baked should be a little thicker than a captain's biscuit. These cakes may be eaten with meat or cheese for breakfast, dinner, and supper, and require a free allowance of butter; and the cakes are more pleasant if placed in the oven a few minutes before being placed on the table. When economy is an object, when a change is required, or if the stomach cannot bear butter, the cakes may be prepared as follows:—Take of the prepared bran four ounces, three eggs, about twelve ounces of milk, with a little spice and salt, to be mixed and put into a basin (previously well buttered). Bake it for about an hour; the loaf may then be cut into convenient slices and toasted when wanted; or, after slicing, it may be rebaked, and kept in the form of rusks. Nothing has yet been discovered of equal utility to these bran cakes, combining, as they do, moderate cost with freedom from starch, and sufficient pleasantness as an article of food." (Camplin, "On Diabetes," third edition).

subside, congestions, especially of the head, are apt to supervene. Such congestion Dr. Camplin found to subside gradually under the use of citrate of ammonia and small doses of colchicum wine. Warm flannel ought to be worn next the skin in all cases, and residence in a warm climate will often be of service as an aid to the means of cure employed.

The great difficulty in the treatment of diabetes is to manage the dyspepsia and impaired digestion, and, at the same time, to diminish and keep in check the formation of sugar. The first principle consists in varying the alimentation so as to prevent disgust; the second is to add fatty aliments in proper proportion to the alcoholic aliment, the exaggerated use of the latter acting injuriously on the nervous system; and the third is to suppress or considerably diminish for some time the use of feculents.

Diarrhœa.—*Definition.*—A frequent discharge of loose or fluid alvine evacuations, without tormina or tenesmus (Good, Copland), in which the intestinal lesion varies from a mere condition of irritation, expressed by the increased and modified secretion (beyond which it does not progress), to those cases in which there is actual inflammation or other lesion of mucous membrane, the latter being a higher degree of the former, the cases passing from one to another by insensible degrees (J. J. Woodward).

The *treatment* of diarrhœa may be founded on the following indications: (1.) When the tongue is clean, the pulse quiet, and all constitutional reaction absent; (2.) when the tongue is white and coated, the pulse accelerated, some fever present, and the pain or soreness constant and increased by pressure. The stools in either case may be black, green, white, or mixed with blood indifferently. When the tongue is clean, if the disease be quite incipient, one dose of an opiate may be given, combined with a gentle cathartic. The form may be one grain of opium, combined with a drachm of compound rhubarb powder, or with three to five grains of calomel. To remove any offending matter that may be present, the action of the bowels may be aided by castor oil, or a saline cathartic, such as a seidlitz powder or compound senna mixture. Sometimes it may be advisable to omit the opium, and to combine antacid remedies with the laxative, as in the following prescriptions:

℞. Sodæ Bicarbonatis Hydrargyri cum creta, a a gr. ii, ad gr. v.; Magnesiæ Carbonatis, gr. iii. ad gr. vi.; Pulv. Rhei. gr. v. ad gr. viii.; misce. Or—

℞. Sodæ Bicarbonatis ; Pulv. Rhei ; Pulv Calumbæ, a a gr. iv. ad gr. vi.; misce.

The administration of such a powder may be repeated at intervals—twice or thrice a day ; and ipecacuanha in small doses (a quarter or a sixth of a grain) may be advantageously combined with each dose. Other more astringent remedies may be administered if diarrhœa persists. In many cases a drachm of syrup of poppies after each stool is sufficient to arrest it. In severe diarrhœa a scruple to half a drachm of the compound chalk powder, in some aromatic (peppermint or cinnamon water,) every four or six hours, may be used whether blood be or be not in the stools. If the opiate and aromatics should prove insufficient, it may be necessary to add to each dose some of the class of pure astringents, as a drachm of the tincture of kino, or of catechu, or of hæmatoxydon, or of iron. The following formula (Diarrhœa Mixture) has been found of service :

℞. Conf. Aromat., ʒ iij.; Sodæ Carb., ʒ iss. (Bicarb.); Tinct. Opii., ʒ i.; Æther Chloric, ʒ iij.; Ol. Caryoph., m xl.; Mucilag. Acaciæ, ℥ i.; Aquæ Destil., ad ℥ v.; misce. One teaspoonful for a dose. This quantity may be given every two or three hours, or every hour, or every half hour, should the purging continue.

Absolute rest in the recumbent posture must be maintained, and warmth applied to the surface of the abdomen. Bland demulcent food, such as arrow-root, with beef-tea or gruel, may be taken.

There are cases of diarrhœa with a clean tongue, which will not yield to laxative remedies, nor to opiates, astringents, or stimulants, either singly or combined, which probably depend on a want of tone in the intestine, associated with decomposition of intestinal contents and fetid stools. In these cases five grains of salicine every four or six hours have often stopped a diarrhœa that appeared fast hurrying the patient to his grave. Salicylic acid and salicylate of soda have also been found useful. Tincture of the sesquichloride of iron is similarly useful in doses of five to ten minutes. In the diarrhœa of whitish stools, with frequent calls and sudden desire to evacuate the rectum, when muco-gelatinous matter like a jelly is passed, no remedy is of so much service as the extract of nux vomica, to the extent of a fourth to a half grain dose ; or strychnia, to the extent of one-twelfth of a grain, in a pill twice or thrice a day, with the sulphate of iron and extract of calumba. Tincture of the pernitrate of iron

(m x. every half hour) may be given with great benefit (W. C. Maclean). It is in diarrhœa of this kind that iron is of so much service. The ferri ammonia-phosphas possesses some desirable properties, especially as to solubility and freedom from the inky astringent taste of preparations of iron. Its preparation is given in the following note: [*Ferri Ammonia-Phosphas.*—Heat common phosphate of soda to redness. Take of the pyrophosphate of soda so obtained ℥ ij. Dissolve in one pint of warm water. Then take of protosulphate of iron ℥ iv. Dissolve in twelve ounces of water. Mix the solutions, collect, wash, and dry the precipitate at a gentle heat over a water-bath. Take of this precipitate ℥ j., Liq. ammonia P. L., ℥ iss., water q. s. Dilute the Liq. ammonia with an equal volume of water, and rub up with the phosphate of iron in a mortar until the latter is dissolved. Then dilute to ℥ viij. Filter the solution, and evaporate at a heat not exceeding 120° Fahr., over a water-bath, and proceed as for the other scale preparations of iron. The dose is one fluid drachm (W. H. Moss, Dispenser, A. H. C.) In fluid extract of coto bark (prepared by Ferris & Co., Bristol), we have also a useful remedy in doses of five to eight minims. Black or dark stools (melæna) are not so much due to bile (atrabilis of Abernethy) as that such stools, resembling pitch, are principally composed of morbid or impaired secretions from the intestines (Hoffman, Home, Graves). The discharge of the black matter is followed by a feeling of relief to the system generally. In cases of true melæna (where the dark color is due to blood), great debility, and sometimes fainting, may follow the evacuations. Stimulating and tonic remedies, such as turpentine, are of benefit (Graves). When diarrhœa is accompanied by a white furred tongue, with pain and soreness, it is necessary to give opiates, combined with some mild purgative. Half a drachm to a drachm of Epsom salts, with a drachm of the syrup of poppies; or fifteen minims of the tincture of hyoscyamus; or, in severe cases, with three to five minims of tincture of opium, every four or six hours, are remedies on which, as a general principle, we may very confidently rely. In other cases, rhubarb, castor-oil, or any other mild purgative, may be substituted for the Epsom salts. In cases of diarrhœa, accompanied by vomiting, a drachm of syrup of poppies alone, repeated every half hour, or every hour, for two or three times, may quiet the stomach, and enable it to bear other remedies. Soda-water, or the effervescing draught, with a tablespoonful of brandy, with

or without a few minims of tincture of opium, often remain on the stomach when everything else is rejected.

Most practitioners lay great stress on the color of the stools, and the necessity of correcting the supposed morbid states of the liver; but the various colors of the stools are in many instances caused rather by morbid secretions from the surface of the mucous membrane of the intestines than by any defective state of the bile in the gall-bladder. In simple diarrhœa, mercury (which is so often given in a routine way) in any form is either unnecessary or injurious in the majority of cases, except as a purgative. It is, however, sometimes necessary, especially in children under four years of age. One general rule may be acted on—namely, that in the adult, whatever be the form of the diarrhœa, if the stools be dark at first, and then become light-colored, purgative medicines are no longer beneficial. In no instance ought they to be continued longer than is sufficient to remove any irritative substances accumulated in the alimentary canal. Sulphuric acid, in doses of the officinal or aromatic diluted drug, of twenty to thirty drops, with water simply, or combined with the compound tincture of gentian, has been found a useful remedy. It may be alternated with the diluted nitro-muriatic acid, and prescribed in a similar manner. The dietetic treatment should be limited to slops, puddings, and white fish boiled, and the drink to weak brandy and water, which acts locally as an astringent, and generally as a diffusible stimulus.

Diphtheria.—*Definition*.—A specific disease commencing with fever, and producing a membranous exudation in and upon the mucous membrane (of one or other, or all of it) covering the tonsils, uvula, and soft palate, the root of the tongue, the larynx and air passages, the posterior wall of the pharynx, or the nasal cavities. The disease is attended with great prostration of the vital powers; also, by a very early appearance of albumen in the urine, which may continue for a very short time only, or may become persistent. In many cases a remarkable series of nervous phenomena are apt to supervene, characterized by progressive paralysis, and sometimes by fatal syncope. The disease is contagious, and apt to be epidemic.

Treatment—There are especially three things it is desirable to bring about, namely:—(1.) Softening or suppuration of the exudation and its connections—to convert the process into a catarrhal one; (2.) to thoroughly disinfect the air pas-

sages; (3.) to overcome the marked asthenia by which all cases of this disease are marked (Wagenen). To accomplish the first, vapor of water at a temperature of 120° to 130° Fahr. should be inhaled continuously for fifteen or twenty minutes every hour; and where the exudation is considerable and tough a very hot poultice should be applied externally, or compresses wrung out of hot water and covered with oil-silk should be used. Under such means the exudation may break down into a suppurating mass in from twelve to twenty-four hours; but the deposit may return again, if the vapor inhalation is omitted too early. Even in those cases which die, this method of treatment accomplishes euthanasia. The temperature of the room in which the patient is confined to bed ought to be kept at 68° Fahr., and its atmosphere kept moist by the steam from a kettle with a long spout constantly boiling on the fire, and by large basins placed about the room, and kept constantly full of hot water. If the patient can be enveloped in a warm moist atmosphere, so much the better; and this may be done by making a tent with blankets over the bed, and, by the aid of a spirit lamp, a tin kettle of boiling water may be maintained at the boiling point, and its steam thus made to envelop the patient. The steam assists very much in dissolving the mucus and in loosening and breaking up the membranous deposit. To accomplish the second indication—namely, disinfection—acetic, salicylic, or carbolic acid, or sulphurous acid may be used. Neither is a specific. A wineglass of vinegar to a pint of water is a good proportion (Sir W. Jenner). The solutions ought to be made as strong as the patient will bear them; and should be used with the vapor of water as a spray in a steam-atomizer, as well as by gargling. The steam antiseptic spray is the best, as the steam carries the disinfectant to every part of the diseased surface; while the vapor which escapes into the room is also a carrier of the antiseptic, as it is of caloric, when a large room is heated by dripping water on a hot plate or stone.

Syringing the throat and nares with the perchloride of iron in solution is also very beneficial. The solution ought to consist of tincture of perchloride of iron, and of glycerine, each half a drachm, with two or three drachms of water. A stronger solution—the strength of the tincture—may be applied with a large camel's-hair brush to a patch of exudation, and the adjacent surface of the mucous membrane; or a preparation, twice the strength of the tincture, may be made by

mixing equal parts of the liquor ferri perchloride and of glycerine, and may be used to brush over the patches if the exudation is very thick. But such an application, as it is powerfully styptic, should be confined to the surface of the exudation only. It readily penetrates it, and exerts its beneficial influence on the vessels below (Squire). In short, the application of this remedy to the whole of the pharynx with food, or separately as a lotion, to be applied as a gargle, or a medicine to be swallowed, affords relief.

With regard to topical applications, Sir Wm. Jenner is of opinion that repeated applications to the throat of caustic solutions are injurious. He recommends one single but efficient application of a strong solution of nitrate of silver (℈i. to ʒi. of water), as a remedy which may stay the spread of the exudative inflammation; but that, on the whole, hydrochloric acid and water in equal parts will more frequently attain the object. It is especially the surface round the exudation, as well as the exudation itself, that should be painted well over with the solution, the brush being passed over the surface two or three times in quick succession. The white discoloration which results must not be confounded with the spread of the diphtheritic exudation. The discoloration from the acid passes away in about thirty-six hours, and that from the nitrate of silver somewhat quicker. Medicinal carbolic acid (as prepared by Calvert, of Manchester) is valuable as a gargle, in the proportion of 1 of acid to 200 parts of water.

There are considerable differences of opinion regarding the usefulness of topical applications, and the best means of applying them. The tincture of the perchloride of iron is recommended by some to be gently painted over the fauces, as already directed. The throat should be washed out as often as possible with permanganate of potash (1 to 300), or with lime water in a solution of chlorate of potash. The local application of lime water by frequent gargling or gentle brushing, with the internal administration of nitrate and carbonate of soda, prove speedily curative in the milder cases, and alleviate distress in the more severe. Ice kept dissolving in the mouth is often also a great comfort, and its use should never be omitted where it can be had. Dr. Greenhow remonstrates against the application of the more severe topical remedies. The pellicle or false membrane ought never to be torn off. The bowels should be opened freely by a dose of calomel and jalap; or by calomel and colocynth

pill, followed in the inflammatory or sthenic forms of the disease by a saline aperient—*e. g.*, sulphate of magnesia in the infusion of roses. If feebleness of pulse supervene, if the redness of the throat assume a dusky hue, if the sense of general weakness become extreme, wine in large doses frequently repeated is required. Six or eight ounces of port or sherry during the day for an adult may be given from the first, with as good a diet as the stomach can digest. During the course of the disease, much larger quantities of wine and even brandy may be necessary; but the quantity of stimulants must be regulated by the habits and age of the patients. A child of three years of age may take with advantage one or two drachms of brandy every hour—*i. e.*, from three to five ounces of brandy during the twenty-four hours (Sir Wm. Jenner). So long as there is firmness of pulse the physician ought to abstain from alcoholic stimulants, and rest contented by giving such saline medicines as exert a slight action on the skin and on the kidneys, or on both. But a rapid pulse indicates the necessity of alcoholic stimulants, which ought to be freely given on the development of the earliest general symptoms. Under all circumstances efficient daily action of the bowels must be secured, and the urinary and intestinal secretions should be examined daily. If blood or albumen appear in the urine, diuretics are contraindicated. Mustard poultices, warm linseed-meal poultices, or the warm wet sheet, as recommended by Dr. Huss in typhoid fever, may be applied to the loins under these circumstances. The hot-air bath applied to the body, without removal from the bed, is also of great service. Diphtheria is most successfully treated by the administration of mineral acids, especially the nitric and hydrochloric; also by guaiacum, chlorate of potash, quinine and iron. Tincture of the perchloride of iron is now fully recognized as having a beneficial local as well as general influence on the disease; and it may be advantageously combined with quinine in the following formula (Tanner):

℞. Quiniæ Sulphatis, gr. ii.; Acidi Hydrochlorici diluti, m x.; Tincturæ Ferri Perchloridi, m xv.; Infusi Calumbæ, ℥ i.; misce. Fiat haustus, omnibus sextis horis sumendus.

As soon as nourishment can be retained by the stomach five to ten grains of the perchloride of iron, equivalent to twenty or forty minims of the tincture, combined with half a drachm of glycerine and half an ounce of water, should be given, and repeated every three or four hours (Squire) It

should be commenced on the first day of the illness, or as soon as the nature of the disease is recognized. Evidence of its good effects are shown by a diminution of the secretions from the fauces and throat, and improvement in general symptoms. Guaiacum is of service in keeping the bowels open. It ought to be given in the form of the rectified spirit tincture, to the extent of one drachm combined with two drachms of glycerine for a dose, as recommended by Dr. Balmanno Squire. This makes a clear solution, to which no water must be added.

The third indication—namely, to overcome the marked asthenia—restoratives are demanded, and feeding is all-important in the treatment of diphtheria. The night should never be passed without either nourishment or stimulant being given; and the quantity of liquid nourishment and of stimulant given in the twenty-four hours must be equal to the estimated requirement of the patient (Squire). A young child (one to two years) may require a teaspoonful of brandy every two hours; a child of three years, two teaspoonsful, diluted, and given in small portions at a time. Milk, beef-tea thickened with arrow-root, milk punch, are most useful alteratives. By so averting death, time is gained for the general disease to run its course (Jenner).

Tracheotomy is of little avail in diphtheria, and the sole object contemplated by an opening in the windpipe is the prevention of death by suffocation. Nevertheless the operation is indicated in every case where the larynx is blocked up by membranous or pseudo-membranous formation; when we can scarcely ever anticipate that the disease will subside in a few days, and before fatal suffocation occurs. The condition of the patient is generally improved for the time by the actual operation, if it is not too long deferred, or done in the death-agony. It is also especially done to gain time; and it is also indicated whether the impediment to respiration is in the larynx only, or whether it extends farther down, or whether secondary changes have already taken place in the lungs. In the two latter cases the chances of recovery are generally very much less; but the operation of tracheotomy does not make the prospects worse for the patient; and it should be done when the existence of a more than merely catarrhal affection of the larynx is indicated by great difficulty of breathing, continuing more than two or three days; or by attacks of suffocation. The operation will not cure the disease. In this respect it differs greatly from croup;

and it is chiefly in cases of croup, as distinguished from diphtheria, that tracheotomy is attended with such favorable results. (See under Croup.) Tracheotomy, if not too long delayed, saves many a life in croup.

In the consecutive paralyses tonics and local galvanism are the most important remedies, and the bowels should be kept open by a pill, taken morning and evening, containing from a quarter to half a grain or a grain of the extract of nux vomica, with a like quantity of sulphate of iron, combined with two or three grains of compound rhubarb pill mass. These may be varied with the administration of pills containing $\frac{1}{12}$ of a grain of strychnia, the strychnia being triturated with sugar of milk, and made into pills with a sufficient quantity of extract of gentian. Syrup of the phosphate of iron in fluid drachm doses may be given twice a day (combined or not with liquor strychnia); and stimulants in the form of malt liquors, especially stout (if free of cocculus indicus), are beneficial if taken with or after meals, and the doses of iron may be taken at the same time. The syrup of the phosphate of iron, quinine, and strychnia I have also found of great use.

Dropsy, General.—*See Anasarca.*

Duchenne's Disease.—*See Paralysis, Bulbar.*

Dysentery.—*Definition*—A febrile disease, accompanied by tormina, by straining, and by scanty mucus or bloody stools, which contain little or no fæcal matter. The minute lenticular and tubular glands of the mucous membrane of the large intestines, with the intertubular connective tissue, are the chief seats of the local lesion, which sometimes extends into the small intestine beyond the ileo-cæcal valve, as in cases in which scorbutus is a predisposing cause. Under some circumstances it is infective.

Treatment—It is the obvious duty of the physician to direct his attention, in the first instance, to the prevention of the disease. He must enquire especially as to the conditions of the diet, that it be sufficient as to its animal and vegetable elements, and of good quality. Next, he ought to ensure the means of detecting the disease early—for time is of the greatest importance in its cure. He must remove the patient from the sphere of action of any of the predisposing or exciting causes, and see that his surroundings are free of all those circumstances which co-operate in aggravating the disease, the chief of which are overcrowding, bad ventilation,

bad food, exposure, and intemperance. With regard to medicinal agents my friend and colleague, Professor Maclean, has written me the result of his extensive experience in India and China:—He is of opinion that the first thing to bear in mind in the treatment of tropical dysentery is, that the appearance of strength in the patient, given by the acuteness of the symptoms, is delusive. Under the use of antiphlogistic treatment the strength of the patient is apt to fail suddenly; and this is often the case, even when the treatment has been more conservative in its character. It was once the custom in India to deplete freely in this disease, either by a general bleeding or by the repeated application of leeches; but the most judicious and successful practitioners in India rarely bleed now, even in the most asthenic forms of the disease, and confine the use of leeches within the narrowest limits. It is certain, too, that mercury is yearly less and less used in India than it was; and there is much evidence to show that a corresponding reduction in the mortality of the disease has been the result. The objections to its use are numerous,—it entails great suffering on the patient, if pushed to ptyalism, aggravating his miseries, and too often permanently injuring his constitution; it has no specific action on the disease, and its cholagogue effects can be attained by remedies which are not open to such objections as can be brought against mercury. In sloughing dysentery it is followed by the worst results; and the observations of clinical observers in India have shown that individuals under the influence of mercury are not only not exempt from attacks of the disease, but are peculiarly prone to be affected by it. This is the case in a very marked degree in Asiatics (Morehead and Maclean).

Ipecacuanha, in the radix anti-dysenterica, has long been used in South America in the cure of dysentery,—whence, indeed, it came. It was much used in India until the mercurial notions of James Johnston prevailed. It was again used by Dr. Twining, of Bengal, by whom it was strongly recommended, and also by Dr. Mortimer, of Madras. Twining combined it with blue pill and gentian, and used it chiefly in small and oft-repeated doses. In South America the practice has always been to administer an infusion of the bruised root,— ℥ ii. being infused over night in ℥ iv. of water, and given early in the morning. In Peru it is given in doses of ℥ ss. to ℥ i. of the powdered root in a little syrup and water. This practice of giving ipecacuanha in large doses has lately been revived in India with encouraging success, and Dr.

Maclean believes, with the greatest number of cures. It appears to act on the portal capillaries, and on those of the mucous membrane of the bowels, and to determine powerfully to the skin. It is usually given in doses of half a drachm or a drachm, either in pills or bolus, or suspended in mucilage, according to the fancy of the patient. It is advisable to give an opiate half an hour before, and to withhold all drink for some hours. Unless there be hepatic complication, it seldom happens that much vomiting is caused by these large doses; on the contrary, they are often tolerated when smaller doses are rejected. The dose should be repeated in about six hours. A sufficient interval should be allowed to intervene between the doses of ipecacuanha, to admit of the patient being sustained by nourishment adapted to the stage of the disease. Dr. Cornish, of the Madras army, has shown from official documents, that the mortality from acute dysentery in Southern India under mercurial treatment was 7.1 per cent. Since the general introduction of ipecacuanha in full doses it has fallen to 1.3. Dr. Ewart, of Bengal, has shown that equally good results have followed the same system in that Presidency. During the forty-two years, from 1812 to 1853–54, the mortality among European troops in the Bengal Presidency amounted to 88.2 in the thousand. But during 1860, when large doses of ipecacuanha were administered, the mortality was only 28.87 in the thousand. Although highly useful in some conditions, it is not to be regarded as a specific in all forms of the disease. It is more effectual in the sporadic and mild acute cases than in the chronic forms. Its use should be limited to vigorous patients with acute catarrhal diarrhœa or dysentery; or with the preliminary catarrhal stage of diphtheritic dysentery (Woodward). The large dose method of its administration, which now prevails, is to give as early in the disease as possible grs. xxv. to xxx. of ipecacuanha in as small a quantity of fluid as possible. A preliminary dose of opium may be of service in enabling the stomach to retain the ipecacuanha. It can be swallowed in the form of a bolus, by wrapping it in soluble tissue paper. The patient should then remain perfectly still in bed, and abstain from fluid for at least three hours. If thirst is urgent it may be appeased by sucking small bits of ice, or taking not more than a teaspoonful of iced water. In from eight to ten hours, from 10 to 15 grains may be again administered, with the same precautions as before. The beneficial results are manifested by the tormina

and tenesmus subsiding, the motions becoming feculent, blood and slime disappearing; and often, after profuse perspiration, the patient falls into a tranquil sleep and awakes refreshed. The ipecacuanha may require to be continued in diminished doses for several days, with sufficient intervals between each dose to admit of food being taken; and for several nights after the stools appear normal, grs. x. to xii. of ipecacuanha should be still given at bedtime. Astringents in any shape during the acute stage are not only useless but dangerous (Maclean, Docker, Waring). Blood-letting has now been totally superseded and rendered unnecessary by the use of ipecacuanha. Ergot has been used in an enema to the extent of 12 or 15 grains in some bland fluid; or in 6-grain doses by the stomach, in cases of epidemic dysentery, with the beneficial result of reducing the quantity of blood in the stools (Dr. Gros, *Practitioner*, Nov., 1868). Opium is not to be regarded as a specific or curative agent, either in acute or in chronic fluxes. Its use should be restricted to the fulfillment of two indications, namely:—(1.) to relieve pain; (2.) to procure sleep. Chronic opium intoxication is to be avoided, by suspending its administration, or by alternating it with other remedies. Hypodermic injections of morphia give the best anodyne or soporific effects. It is most frequently indicated in cases of acute gastro-intestinal catarrh. In alcoholic conditions it may be of advantage to combine chloroform with the morphia, repeating the dose after an hour's interval. Dover's powder,—Pulv. ipecacuanha composita, is of service in full doses of grs. x to xv. at bedtime, followed up by a five-grain pill of the same, taken every four or six hours for two or three days, or till relief is obtained. In smaller doses, frequently repeated, it may be combined advantageously with nitrate of silver (Waring).

In mild cases, but where the pains are excruciating and attended with tenesmus, the warm bath generally gives instantaneous relief in cases following chills, if adopted sufficiently early. Dr. Maclean directs that it be brought to the bedside, and kept at a high temperature (not under 99° or 100° Fahr.), the patient to remain in it till he feels faint. He is then to be carefully and quickly dried, put to bed, and have grs. xv. to xx. of ipecacuanha. Woodward objects to the hot bath except in chronic fluxes. Leeches, to the number of six to twelve, applied round the verge of the anus, often afford sensible relief to the tormina and tenesmus, by unloading the portal and hæmorrhoidal veins (Waring).

In subacute and chronic dysentery, "no remedy has proved more useful than nitrate of silver, in doses of half a grain to one and a half grains daily, reduced to a fine powder, and conjoined with Dover's powder in the form of a pill (Dr. Waring). It has also been extensively used in the form of enema, as follows:—First throw up into the transverse colon, by means of a flexible stomach-pump tube, introduced to the extent of six or seven inches, very cautiously and gently, enemata of warm water, or milk and water, to the extent of three, four, or six pints, so as to bring away any fæcal accumulations. Then follow up this practice by the injection of two and a half to three pints of distilled water, holding in solution gr. xv. of nitrate of siver" (Hare, Waring).

In chronic cases a combination of sulphate of copper and of opium is often highly serviceable (J. Brown, Raleigh, Waring), in the following formula:—

℞ Cupri Sulph., gr. ¼ to ½; Pulv. Opii, gr. ½. Make a pill or powder, of which three are to be taken daily.

Five grains of Dover's powder may be substituted for the opium.

Solution of the pernitrate of iron is highly commended by Professor Maclean. It is astringent and tonic in doses of mx. to mxv. diluted in water. It may also be used as an injection.

Nux vomica, combined with opium and iron, may be of use (Graves). In malarial dysentery, full doses of quinine (not less than twenty grains) ought to be given in acute cases before giving ipecacuanha, and it should be continued till there is evidence of cinchonism. The two drugs should then be given in alternate doses till the characteristic good results of each are produced (Maclean). The bark of the root of calotropis gigantea (or mudar) has been recently used in India, and is said to be an excellent substitute for ipecacuanha. It is used in doses of a scruple to a drachm, is a reliable cholagogue, and sedative to the muscular fibres of the intestine, rapidly allaying pain, tenesmus, and irritation (Durant, *Ind. Med. Journ.*, May, 1866). On the Continent the neutral salts and mild purgative medicines are highly spoken of. Sulphate of soda is to be preferred to sulphate of magnesia (Mery, J. J. Woodward). It induces a decided increase in the hepatic secretion, which the Epsom salt fails to do (Rutherford and Vignall). Phosphate of soda and Rochelle salts are, for similar reasons, to be preferred to the Epsom salt, which is the least desirable of saline purgatives

in dysentery. Castor-oil is similarly objectionable. It has no stimulating action on the hepatic secretion. In the treatment of chronic dysentery in the Seaman's Hospital, London, the Senior Physician, Dr. C. H. Ralfe, states that having watched 200 cases, he recorded in 1876 that those who lingered the longest, or at length did well, had little or nothing to owe to therapeutics, an opinion concurred in by Dr. Stephen Ward. He now abstains from action and special treatment, except to meet occasional and urgent symptoms, and places more reliance on the good effects of rest and diet. He has, however, systematized the administration of castor-oil, by giving it on stated days, at least twice a week. It removes retained scybalous fæcal matter and irritating discharges, and prevents their accumulation. Some had bismuth mixture in addition, others had ipecacuanha (12 to 20 grains), in single doses, repeated, if necessary, on second or third day whenever a relapse or return to the acute form was threatened. Sixteen out of thirty-eight cases were discharged cured; in nine of whom the duration of the disease prior to admission had averaged 18 months, and none less than five months. In painless diarrhœa and in chronic fluxes bismuth is of use after evacuants. From mercurials no advantages are to be expected that can counterbalance the serious objections to their use; but the benefit of the alterative effects of the remedy may be obtained by minute doses of corrosive sublimate. In certain cases of chronic dysentery Parkes found it most useful commencing with doses of one eighth to one sixth of a grain in combination with preparations of cinchona. It increases the hepatic secretion. Ringer gives the 1ooth of a grain every hour or every two hours, alike in acute and chronic dysentery.

Dr. Bryson writes that he has seen all the astringents, both mineral and vegetable, mercury both internally and externally, with many other medicines, tried without any benefit; but there were some means which were useful in relieving the more urgent and distressing symptoms. Amongst these he mentions a well-regulated farinaceous diet, opium suppositories, anodynes, astringent injections, in combination with opium, cascarilla, resinous astringents, and the application of leeches to the rectum when tenesmus was distressing, or over the course of the colon when there was deep-seated pain. An injection of warm starch (two ounces) with laudanum in it, will often give great relief. As much nourishment should be given in a liquid form as the patient can be

got to take. Milk boiled with flour or arrow-root and barley-meal should be taken as often as possible, night and day. It should be taken cold, even with ice, and in small quantities at a time; and small pieces of ice not only allay sickness and nausea, but seem to soothe the irritability of the intestines. Strong beef-tea, or Liebig's extract of flesh, are most useful. The value of a change of climate as a curative measure is forcibly illustrated by Dr. Bryson. He says that the crews of vessels improve in health almost immediately after quitting the station where dysentery prevailed. Where sewage is applied to the soil by surface irrigation, it ought to be diluted largely with water, and deodorized by carbolic acid. In the scorbutic form we have a valuable remedy in the Bael fruit, which contains a large quantity of tannin, with vegetable mucus, a bitter principle, and a vegetable acid. It is much used in Bengal; and in the scorbutic form Dr. Maclean has seen it successful when all other measures have failed.

Dyspepsia.—*Definition.*—Impairment of digestion, arising without perceptible change of structure or lesion of the stomach.

Treatment.—Congestion, catarrh, and functional states associated with what are called dyspeptic symptoms, or "imperfect digestion," are the results of stomach diseases for which the physician is called most frequently to prescribe. When there is reason to believe congestion exists, a sparing and easily digested diet is to be prescribed, with total abstinence from fermented drinks; and in cases where catarrhal inflammation prevails the blandest food must be given in very small quantities. In severe cases leeches are to be applied over the region of the stomach, and the patient may sip iced tea, or suck small pieces of ice, to relieve thirst. In impaired digestion from any cause, a mode of life tending to improve nutrition is to be aimed at. The necessity of strict attention to diet in all cases of impaired digestion is absolute. If fulness and uneasy sensations are experienced after dinner, less food should be taken at that meal, and more at breakfast; the principle being to apportion the amount of food necessary to sustain the body more evenly over the waking hours than is commonly done. The great fault in the dietetic system of this country consists in most people supporting themselves mainly by dinner. This meal is consequently too large; and the quantity taken at dinner should

be resolutely diminished till breakfast is appreciated (Leared, l. c. p. 150).

Special symptoms, common to various morbid states, require special modes of treatment. Excess of acid is best neutralized by lime-water, magnesia, or alkaline remedies, selected according to the state of the patient's bowels; and the gastric fermentation which is apt to be established may be checked by brandy and various aromatic spirits. Bicarbonate of potash and nitrate of potash, in the proportion of eight parts of the former to one part of the latter, is useful in cases of habitual acidity: and all these antacid remedies should be taken about three or four hours after a meal. Pills containing from a quarter to half a minim of creasote, given with each meal, will counteract fetid eructations. It checks that fermentation in which acetic and carbonic acids are formed; while conium and belladonna are the medicines which better than opium allay general nervous irritability. In cases of slow digestion, with deficient secretion of the gastric juice, the rules of treatment are, (1.) To let albuminoid food be as liquid as possible. Eggs must be eaten when cooked short of coagulation of the albumen. (2.) To let the day's allowance of food be taken in small quantities at regular intervals. (3.) That by the administration of alkalies the food may pass to the intestines, and be digested there rather than by the stomach. This latter mode of treatment by alkalies, recommended by Chambers, is contrary to that recommended by Dr. Budd. Both are consistent with physiological facts, and the course to be followed must be determined by the nature of the case. Both gave large doses of bicarbonate of soda—3 ii. dissolved in a pint of warm water—to counteract the excessive acidity, or to promote the passage of food to the intestines. The amount and kind of food taken is of importance to be attended to in cases of slow digestion. If a fair amount of exercise be taken, the following dietary, slightly modified from that proposed by Dr. Leared, will be found appropriate in such cases:

BREAKFAST, (8 A. M.)

Bread (stale), . 4 oz.	Mutton Chop, or other Meat (cooked) free from fat and skin, 3 oz.	Tea, or warm milk and water and sugar, or other beverage, ½ pt.

LUNCHEON, (1 P. M.)

Bread (stale), . 2 oz.	No solids, such as Meat or Cheese.	Liquid, . . . ½ pt.

DINNER, (5 or 6 P. M.)

Bread (stale), . 3 oz Potatoes and other vegetables, . 4 oz.	Meat (cooked) free from fat and skin, . . 4 oz.	Liquid, not more than half a pint.

TEA or SUPPER (not sooner than three hours after dinner.)

Bread (stale), . 2 oz.	No solids, such as Meat or Cheese.	Tea, or weak brandy and water, or sherry and water, or toast and water, to the extent of ½ pint.

The quantity of wine or other fermented liquor, and also of animal diet, should be thus reduced till the disease subsides and the urine is healthy. Soups, tea and coffee, drank, as they usually are, boiling hot, debilitate the coats of the stomach, tend to produce dyspepsia, and are abandoned by many persons from their so often exciting cardialgia. The best bread for the dyspeptic is the unfermented bread, baked by the process of the late Dr. Dauglish, entirely from wheaten flour of the best quality. It is known as "aerated bread," because carbonic acid gas is substituted for yeast. It is more easily digested than common household bread. Pastry and "sweets" must be strictly forbidden. They are "sweet in the mouth, but bitter in the belly." Forms of indigestion marked by excessive acidity and heartburn may be relieved by bicarbonate of soda, in doses of fifteen grains, combined with a few grains of nitre, taken two or three times a day. At the same time, free excretions from the liver and bowels must be sustained by occasional small doses of blue pill or podophyllin, combined with extract of colocynth and henbane, while exercise and diet are duly attended to. Weakened digestion from over-fatigue may be restored under the use of carbonate of ammonia, conjoined with compound tincture of gentian, or with extract of gentian in the form of a pill. Extracts of nux vomica or strychnia are also valuable remedies. Half a grain of extract of nux vomica, half a grain of sulphate of iron, and four grains of compound colocynth pill, form a combination which, taken early in the morning, or one hour before dinner, generally induces gentle action of the bowels. (Leared). Compound rhubarb pill may be substituted in place of the compound colocynth pill. Another useful ingredient in a dinner pill I find is ipecacuanha, to the extent of one grain, or half a grain in each, in cases of slow or torpid digestion. Indigestion from habitual drunkenness,

or where there is great irritability or sensitiveness of the stomach is best relieved by the pure bitter infusions, such as gentian, quassia, hops, and calumba, singly, or combined in a mixture, so that a dose may be taken two or three times a day, an hour before each meal. Grave's tonic I have found especially useful. It consists of the tinctures of quassia, calumba, compound gentian, cinchonia flava, of each an ounce, and from two to four drachms of the liquor morphiæ hydrochloratis; of this mixture a teaspoonful is to be taken one hour before each meal. Quassia may generally be taken as a cold infusion, and is thus prescribed by Niemeyer; "In the evening pour a cupful of cold water over a teaspoonful of quassia chips; by the next morning a bitter infusion will have formed—to be taken fasting;" or water may be poured into a bowl made of quassia-wood, sold for this purpose, and after standing over night in the bowl, the water is to be taken in the morning. Hop-bitter is most agreeably taken in the form of the many bitter ales, such as are brewed by Bass, Allsopps, Ind-Coope, Salt, and the genuine Bavarian beer, brewed all over Germany. Such ales must be got direct from trustworthy brewers who brew from hops, and where no injurious substitute is used instead of hops. For other reasons it is necessary to obtain the ale direct from the brewery. Once it passes into other hands, there is no guarantee that some of the numerous processes for "stretching," and otherwise increasing the quantity, to the disadvantage of the consumer, will not be practiced. Of the extent of malt originally prepared by Trommer, as a genuine extract, containing the soluble constituents of the malt and of the bitter of the hop, Niemeyer speaks highly in the treatment of cases of "irritable ingestion," as having been almost the only nourishment the patients could take. Small doses of opium, or of morphia in an ammonia mixture, may be given at bedtime, so as to secure sleep at night, or Grave's tonic as above. In prescribing the mineral acids, the following general rule ought to be kept in mind, namely, that the influence of sulphuric acid is astringent, while that of hydrochloric acid promotes digestion, and of nitric acid secretion (Dr. Bence Jones).

Eclampsia.—*See Convulsions.*

Ecthyma.—*Definition.*—An eruption of large round pustules, generally distinct, and seated upon a hard inflamed base. The pustules are succeeded by dark-colored scabs,

which leave superficial cicatrices behind them, or red stains, which disappear after a time.

Treatment is chiefly by diluents, simple and emollient baths, and regulation of diet. Moderate exercise should be taken, combined with the use of alkaline or salt-water baths. Mild laxatives are beneficial, and spirits, wine, and beer are to be refrained from. The food should be as nourishing as can be digested. Tonics, such as quinine and iron, are also indicated. A stimulating lotion, composed of muriatic acid diluted with water, is of use to brush over the parts and promote cicatrization. Specific treatment must be adopted when the disease is associated with syphilis or scabies.

Eczema.—*Definition.*—An eruption characterized by—(1.) Infiltration of the skin; (2.) exudation on its surface; (3.) the formation of crusts; (4.) itching.

Treatment of eczema must be constitutional in the first instance; and local applications suited to the nature of the part affected are to be carefully used. Derangements of the digestive organs must be especially rectified. If the tongue is loaded, the appetite bad, the liver torpid, as indicated by light clay-colored evacuations and costive bowels, small doses of grey power in combination with quinine are indicated. Dr. T. M. Anderson suggests the following:—

℞. Sulphatis Quiniæ, gr. xii.; Pulv. Rhei., gr. xxxvi.; Hydrarg. c. Creta, gr. xxx.; Sacchari Albi, ʒ i.; misce, et divide in Pulv. xii.

Two of these powders are to be taken daily by an adult; but at any age the dose must be so adjusted that the patient has at least one full natural evacuation daily. If the patient is robust, but with the functions of the liver and bowels impaired, occasional doses of calomel, alone or in combination with scammony, will stimulate the torpidity of the digestive organs; and at the same time the cutaneous inflammation will diminish. If the patient is a full feeder, and will not be persuaded to live more sparingly, one drachm to two drachms of the sulphate of magnesia may be given twice daily, with a sixth to half a grain of tartar emetic added to each dose. The effect of this remedy will be to diminish desire for food, and at the same time keep the bowels freely open. If the patient is scrofulous, or debilitated from insufficient food, or food not nutritive enough, more nourishing food must be given, combined with tonics containing iron and cod-liver oil. Children a few months old, reduced to "skin and bone," recover wonderfully under the influence of twenty

drops of the syrup of the iodide of iron in a teaspoonful of cod-liver oil repeated three times daily, the dose of the oil being gradually increased to a tablespoonful (Anderson) Syrup of the phosphate of iron, or of the phosphates of iron, quinia, strychnia, should be alternated with the iodide of iron. The treatment must be steadily maintained for at least six weeks or two months. In severe cases the oil may be rubbed into the skin, in addition to giving it internally. Cod-liver oil and iron preparations are almost equally serviceable to eczematous adults. When there is a difficulty of taking the oil in its pure state, the emulsion of it will often be found useful; when the appetite is very deficient, a pure tonic, such as quinine and aromatic sulphuric acid, may be of service, as in the following:—

℞. Sulphatis Quiniæ, gr. xvi.; Acid Sulphurici Aromatici, ʒ iv.; Syrupi Limonum ʒ ss.; Infus. Cascarillæ, ad ʒ viii.; misce, et cola per chartam. A table-spoonful to be taken three times a day half an hour before food.

If the eczematous patients are robust and plethoric, the local abstraction of blood by leeches or scarification is often beneficial; but in general the action of calomel purgation is sufficient to reduce the inflammatory action, combined with a regulated abstemious diet of mixed animal and vegetable food simply dressed. Dishes of pastry, pickles, spices, strong tea, and coffee, are particularly to be avoided; while the use of wine, spirits, and malt liquors must be entirely suspended. If the patient has been in the habit of using stimulants, the eczema will be more difficult to subdue than if he had been an abstainer from these fluids. It is sometimes necessary to prescribe milk diet for a time, all animal food being proscribed.

Of internal medicines, arsenic, sulphur, and the alkalies are especially useful (Startin, Anderson). Of Fowler's solution (the liquor arsenicalis of the Edinburgh Pharmacopœia) an adult may commence with five minims thrice daily; and at the end of a week the dose should be increased by one drop every second or third day, till the disease begins to yield, or the medicine to disagree (Anderson), "In order to secure the virtues of arsenic as an alterative, it will be necessary to push the medicine to the full development of the phenomena which first indicate its peculiar action on the system. Arsenic as a remedy is too often suspended, or altogether abandoned, at the very moment its curative powers are coming into play. The earliest manifestation of its phy-

siological action is apt to be looked upon as its poisonous operation; and the patient declares that the medicine has disagreed with him. Forthwith the physician shares his fears; the prescription is changed, and another case is added to the many in which arsenic is said to have failed after a fair trial of its efficacy" (Begbie, "Contributions to Practical Medicine", p. 270). Arsenical solutions should be given immediately after food; and in persons whose digestive organs are weak, a tonic infusion, such as the infusion of cascarilla or gentian, is the best vehicle for its administration; and a few drops of morphia may sometimes be added, as in the following:—

R. Solut. Fowleri; Solut. Muriatis Morphiæ, a a ʒ ii.; Syrupi Limonum, ℥ ss.; Tinct. Cocci Cacti, ʒ ss.; Infus. Cascarilla, ad ℥ xii.; misce. A tablespoonful of this mixture to be taken thrice daily immediately after food.

The liquor sodæ arsenias, in doses of five to ten minims, is said to cure eczema with less gastric disturbance and with less irritability of the conjunctiva than the liquor arsenicalis. As the disease yields, the dose may be diminished; but the use of the remedy should not be suspended till some time after the complete removal of the eruption. In the case of infants at the breast, arsenical solutions may be given to the mother; and mercury may be combined with the arsenic, as in Donovan's solution, of which ten minims may be given thrice daily. Mr. Hunt lays down certain conditions for the administration of arsenic; and amongst them he forbids its commencement while signs of active cutaneous inflammation are present.

The use of the natural mineral waters which contain sulphur is the best method of securing the full effects of the alterative action of sulphur in chronic cases of eczema where there is an absence of inflammatory action. These waters are especially, Harrowgate and Moffat in this country; Aix, Barèges, St. Sauveur, Cauterets, on the Continent. Alkalies are most beneficial when the patient has been in the habit of taking stimulants; and when there is a tendency to acidity of the stomach, and to the deposit of lithates in the urine, or to gout, or to rheumatism, aqua potassæ may be given, largely diluted with water, in doses of twenty minims three times a day. Dr. Anderson recommends sesquicarbonate of ammonia (now called the carbonate of ammonia in the British Pharmacopœia), in doses gradually increasing from ten to thirty grains. If gout prevails, colchicum ought to be given

with the other remedies; and in rheumatism the acetate or bicarbonate of potash in half-drachm doses should be added to each dose. All these alkaline remedies should be largely diluted with water. For the relief of pain and procuring sleep in acute cases, opiates must be administered; and when they fail tincture of cannibis sativa, in doses of mxxv., has been found sometimes to procure sleep, or at all events comparative ease (Christison). With regard to local treatment, the first point is to remove all sources of irritation, and especially the crusts. A poultice composed of crumbs of bread and hot almond oil applied to the eruption at night will usually bring away the crusts in the morning. If they fail to be detached by this application, they must be again lubricated with fresh almond oil, and forcibly removed when they are thoroughly softened. If, after the crusts are removed, the surface is seen to be acutely inflamed, and if there is a burning heat in place of itching, local sedatives must be applied. For this purpose Dr. Anderson recommends a cold potato-starch poultice, a small quantity of powder containing camphor being sprinkled over the inflamed surface before the poultice is applied. The camphor powder may be composed of the following ingredients:—

℞. Camphoræ, ʒ ss.; q. s.; Pulv. Oxydi Zinci; Pulv. Amyli, a a ʒ iii. This powder must be kept in a stoppered bottle (Anderson).

Instead of poultices, a mixture of powdered oxide of zinc and glycerine, in the proportion of half an ounce of the one to two ounces of the other, will be found to be a soothing application; and to it a little camphor may also be added, as in the following:—

℞. Camphoræ, ʒ i.; Pulv. Oxydi Zinci, ʒ ii.; Glycerinæ et Adipis Benzoati, a a ʒ iv.; Cochinillini, gr. i.; Spt. Rosmar., ʒ i.; vel Ol. Rosar., mii.; misce. This mixture must be stirred before using it, a thin layer being then rubbed over the inflamed part twice or thrice daily (Anderson).

Carron oil (liniment aqua calcis) I have found a soothing remedy. When the disease passes into a chronic stage, as indicated by the disappearance of the burning heat and the supervention of itching, the local applications must vary with the condition of the parts. If there be much infiltration of the tissues, treatment by potash applications is the most efficient (Hebra, Anderson). The more extensive the disease the weaker the solution ought to be for application over a large surface. If the infiltration is slight, common potash

soap (soft soap, black soap, sapo mollis, sapo viridis), or a solution of one part of it in two of boiling water, a little oil of rosemary or citronella being used to conceal the odor, may be used. A piece of flannel dipped in this liniment should be rubbed as firmly as possible over the affected parts night and morning, the solution being allowed to dry upon them. It should, however, be washed off after each application. If the patient can bear it, a piece of flannel, saturated with the solution, may be left in contact with the part all night. Another method of treatment is to paint over the eruption night and morning with a large brush, charged with the aqua potassæ of the Edinburgh Pharmacopœia, its irritant action being neutralized by means of cold water when the smarting becomes excessive. A solution of potassa fusa may also be employed of various strengths. If the case be mild, two grains to an ounce of water; if more severe, then five, ten, twenty, thirty, or even more grains to the ounce of water may be used. But all these stronger solutions must be washed off very speedily, and they ought not to be employed more than once daily. Such remedies the physician ought to apply himself, and not entrust the control of their action to the patient. As infiltration subsides, the solution ought to be gradually diluted; and great caution is necessary in using such local applications upon infants, delicate females, and old or infirm persons. The affected parts should be bathed repeatedly during the day in cold water, during the use of potash applications. The cold douche may be employed where it is practicable. If the itching is very intolerable, prussic acid may be mingled with the potash applications, as in the following:—

℞. Potassæ Fusæ, gr x.; Acid Hydrocyan. Dil. (Ed. Ph.) ʒ ss.; Aq. Rosarum, ʒ ii.; misce. A little of this solution is to be rubbed firmly over the eruption night and morning, and at any time when the itching sensation is severe.

If there is a tendency to the formation of fissures, which are apt to result from the use of potash, cod-liver oil, glycerine, or carron oil should be applied to the parts every night. Glycerine of aloes is also recommended as a healing agent by M. Chausit and Dr. Waring. It is prepared by evaporating four to eight parts of the tincture of aloes, and incorporating the residuum with thirty parts of glycerine. Tarry applications are of great value in the local treatment of the declining stages, when infiltration and itching are subdued. Common tar (pix liquida) or oil of cade (oleum cadini, as

manufactured at Aix-la-Chapelle) should be rubbed firmly over the eruption by means of a flannel cloth, and allowed to dry upon it. It should be applied thrice daily, and washed off with soft soap or petroleum soap. Dr. Anderson recommends that common tar should be combined with one of the potash solutions—for example, a mixture of equal parts of common tar, methylated spirit, and soft soap, used as above directed, will be found useful, or the following preparation, as less offensive:—

℞. Saponis Mollis, Spt. Rectificati, Olei Cadini, a a ℥ i.; Olei Lavandulæ, ℥ iss.; misce. A little quantity is to be firmly rubbed over the eruption night and morning; and it must be washed off before each reapplication.

Of mercurial applications the citrine ointment (Ung.-hyd. nit.) is the best, or the ointment of the iodide of mercury. They may be used of their full strength, or diluted with lard, according to the indications of the case, care being taken that mercurialism is not induced. When eczema has reached the dry stage, Mr. Milton regards the dilute ointment of the nitrate of mercury as the most effectual remedy we possess. In the itching of pruritus—pruritus scroti and prurigo pudendi muliebris—especially the prurigo senilis, the dilute ointment is highly spoken of by Dr. Bowling, United States, and by Dr. Balmanno Squire in this country, as one of the best remedies for subduing the irritation and itchiness. Dr. Bowling advises that the parts be first sponged with vinegar or lemon-juice previous to the application of the ointment; and states that for fifteen years he has not failed to effect a permanent cure (*Med. Times*, June 6, 1868). In using ointments, a small quantity should be melted on the finger, and rubbed firmly into the affected part. None should be allowed to lie undissolved upon the skin; and the part should always be cleansed with soap and water before reapplication. Epilation should be resorted to in cases of eczema of the hairy parts of the face. In very mild attacks, or with a view to prevent the recurrence of the disease, the skin may be washed occasionally with soft soap and water. Hendrie's "Dispensary Petroleum Soap" is recommended by Dr. Anderson, to whose admirable lectures on "Eczema," in the *Medical Times and Gazette* for May, June and July, 1863, (since published in a separate volume), the reader is referred for more detailed information.

Elephantiasis Græcorum—*See Leprosy, True.*

Emphysema—*See Lungs, Emphysema of.*

Encephalitis and Myelitis.—*Definition.*—Inflammation of the brain and spinal cord substance, with or without implication of the membranes, usually partial.

Treatment.—1. *Encephalitis.*—So soon as there are any circumstances which may lead to "head symptoms" after injury, it is well to commence treatment at once with local antiphlogistics, leeches, and evaporating lotions, such as muriate of ammonia in solution with vinegar, applied by cloths, which are to be frequently changed. The patient must be made to observe a rigidly abstemious regimen, and rest with the head elevated above the shoulders. Purgation is to be instituted by means of watery evacuants, and the same general treatment is to be adopted as in meningitis.

2. *Myelitis.*—In classing ramollissement of the cord with inflammation, it might appear to infer that the treatment should be strictly antiphlogistic. It may be laid down as a general rule, however, that bleeding ought not to be had recourse to after palsy has occurred. Previous to that symptom it may be admissible; and it may be stated generally, that so long as the affected muscles are convulsed, rigid, and irritable, the use of antiphlogistics and counter-irritants may be indicated; but when the means calculated to subdue excitation have failed to arrest the further progress of the disease, and paralysis supervenes, stimulants are the only remedies which have the power of restoring to functional activity those nerve-cells and conducting fibres which are not irretrievably destroyed (Meryon). The chances of saving the patient by other antiphlogistic remedies mainly rest on acting on the alimentary canal so as to produce three or four motions in the twenty-four hours, and thus create such a derivation as in some degree to relieve the parts. The greater number of patients that recover are restored by these means. The particular purgative is not perhaps important; but as the neutral salts act not only on the intestines, but also on the bladder, that class of remedies is generally preferred.

With respect to local counter-irritants, as blisters, moxas, or setons, little favorable can be said, unless they are employed previous to paralysis, as the tendency to gangrene renders their application of doubtful utility. When had recourse to, however, it will be found better to apply them above the seat of the disease than immediately over it, the greater vitality of the superior parts giving more assurance

of the disposition of the wounds to heal. Of all stimulant remedies, electricity and strychnine are the most potent and the best. Secale cornutum has been recommended as a remedy possessing the same power as strychnine (Barbier, Payen, Meryon). When there is no great pressure beyond that which simple congestion produces, nor actual disorganization of the spinal cord, the remedial power of secale cornutum is said to be very great. It seems especially to resuscitate the muscular contractility of the rectum and bladder, the pelvic viscera generally (Guersant, Trousseau, Brown-Sequard, Meryon). The ergot of rye may be given in the forms and doses as follows:—(1.) Ergot, 5 to 10 grains, infused in boiling water, three times a day; (2.) Ethereal tincture (not now in the pharmacopœia), in doses of from ten to twenty drops, twice or three times a day; (3.) Extractum ergotæ liquidum, 15 to 30 minims; (4.) Infusum ergotæ, made fresh on each occasion, 1 to 2 ounces; (5.) Tincturæ ergotæ, 15 to 60 minims. It does not relieve the reflex convulsions, which are sometimes alleviated by Purssic acid, digitalis, belladonna (Meryon, chlorodyne or chlor-morphine. [Conflicting statements exist in text-books on Materia Medica as to the best form of ergot for internal administration. 1. Ergot contains one-third of its original weight of oil, got out by percolation with ether (Squire). 2. It contains a large quantity of fixed oil, about 75 per cent. (Garrod). 3. It contains 25 to 28 per cent. of fixed oil (Stillé and Maish). Ergot preserves its virtues not much over a year (Stillé and Maish). The active principle is a body somewhat resembling gelatine, formed from the gluten of rye ovary, and readily changed by the influence of chemical agents (Bucheim). A number of non-crystallizable compounds, possessing more or less activity, have been isolated from ergot, the most important being sclerotic acid (to the amount of 4 and 4½ per cent.), the other, scleromucin, to the extent of 2 to 3 per cent. This multiplicity of uncrystallizable principles may explain why preparations possessing some activity may be obtained from very different processes—*e. g.*, Wiggers' ergotine, obtained in 1830, is soluble in alcohol, but insoluble in water and ether, and is said to have poisonous properties. Bonjean's Ergotine (Germ. pharmacop., as "Extr. Secalis Cornuti") is a concentrated aqueous infusion, precipitated by half its weight of alcohol, and the clear filtrate evaporated. Wenzell (1864) proved the presence of two alkaloids (ecbolina and ergo-

tina). They exist in combination with ergotic acid. These have been since shown to be identical, and to possess no decided physiological action (Dragendorff and Blumberg). In 1875 Tannet isolated another alkaloid, ergotinina, from the fixed oil of ergot prepared by ether, by agitating it with acidulated water. Fresh ergot yields .12 per cent. of ergotinina, which is crystalline, but soon becomes resinous. As regards the properties of the oil extracted from ergot by maceration with ether, Stillé and Maish write that "it displays even greater energy in producing the same symptoms, and in addition other symptoms (which are specified), than does ergot itself. The effects continue for several days:" but they add that "the oil exhibits no influence upon the gravid uterus, but the residual ergot from which it had been extracted seems to possess the ecbolic power of the drug unimpaired" (The National Dispensatory, p. 545). It does not appear, therefore, that we are warranted in rejecting the ethereal tincture of ergot as an inert preparation, as Mr. Squire has represented it to be (Compan. to Pharg., 1871). It may still be the best form of remedy for some cases, although it has become obsolete as a pharmaceutical preparation in our pharmacopœia; while the residual ergot, possessing ecbolic powers, may be also useful for other purposes. Besides, Mr. Squire states that in the directions for preparing the extractum ergotæ liquidum (doubtless a valuable and energetic preparation when properly made from fresh ergot), the ether ordered is not sufficient to extract all the oil. The quantity, he states, ought to be doubled. So that this energetic preparation, if prepared as directed in our British Pharmacopœia, still contains half the oil left by the insufficient quantity of ether which is used, so that the whole of the oil is not now rejected in preparing the extractum ergotæ liquidum. A writer in *Medical Times and Gazette* (Oct. 16, 1875), under the signature of "Eyes Right," has described how "teachers differ" on matters of fact, and gives the teachings of Squire, Aitken, and Garrod, on "Ergot" as an example. But from what I have quoted from the most recent teachings of Stillé and Maish, I do not find we are justified in excluding the Ethereal tincture of ergot as an inert preparation.]

After the local pain in the back has been subdued (by the regular and repeated application of two or three leeches to the painful part, followed by a large warm poultice over the whole length of the spine, and a belladonna plaster of equal

length to follow it, or an occasional blister on each side of the spine, together with mild, warm purgatives, if necessary). Dr. Meryon has found no remedy so effectual as strychnia, in the dose of one-twentieth of a grain, repeated more or less frequently (twice or three times a day), according to the evidence of its action It may be combined advantageously with ipecacuanha in cases where the intestinal mucus seems deficient The absence of pain and of spasmodic muscular contraction necessitates great caution in determining the precise moment when the spinal cord is likely to be benefited by the energetic excitement of strychnia. The internal administration of this remedy ought, therefore, to be always preceded by its external use, together with other stimulants, in the form of embrocations over the spine, when the stage of excitation has been subdued. In cases with a history of syphilis, and where there may be some reason to believe that hardening or induration of the cord or its membranes has taken place, the iodide of potassium may relieve the early phenomena, and by the aid of setons the progress of the disease may be held in abeyance, so long as the discharge is maintained from the seton.

When disorganization of the spinal cord has become an accomplished fact, the disease is incurable, but yet the exigencies of the patient are not the less pressing on the careful attention of the physician, and in nothing more so than in the protection which is called for against bedsores, which will sometimes occur in spite of the greatest care (Meryon.

Electricity, after the activity of inflammation has been subdued, is a therapeutic agent of great value; and the continuous current of galvanic electricity seems to be just as efficacious as the induction or intermittent current. But whether galvanism or electro-magnetism be employed, no high degree of tension is required for the restoration of muscular power; on the contrary, Dr. Meryon justly believes that the favorable course of many a case has been retarded by the employment of strong currents. Dr. Althaus, also, is in favor of weak currents.

Endocarditis.—*Definition.*—An inflammation of the lining serous membrane of the heart, covering the valves and lining the chambers of that organ.

Treatment.—No defined line of treatment can be laid down suitable for all cases; because the circumstances under

which endocarditis occurs are extremely varied. What has been written relative to pericarditis applies equally to endocarditis; but the management of cases in which the patients suffer from valvular lesions and their immediate consequences demands the adoption of various lines of treatment. Stimulants are generally called for in large quantities; and digitalis also may be necessary if the action of the heart is weak and failing. When endocarditis seems lapsing into the chronic stage, the use of iodide of potassium and liquor potassæ, combined with bitter tonics and abundant nutriment, are to be recommended. Alkalies and carbonate of ammonia are to be given with free stimulation by alcoholics in cases of obstruction from blood coagulation in the cavities of the heart. Cases of malignant, infective, or ulcerative endocarditis (attended with fever and pyæmic symptoms in which retinal hæmorrhages are almost invariable), are to be treated in the same way as cases of septicæmia. They constitute the diphtheritic endocarditis of the Germans, some septic source poisoning the blood

Enteric Fever.—*Definition.*—A continued specific fever, having an incubation-period of about two weeks, with an eruption on the skin of isolated, elevated, rose-colored spots, chiefly on the abdomen, appearing generally from the seventh to the fourteenth day, occurring in crops, each spot continuing visible about three days and vanishing on pressure. Languor and feebleness are prominent from the first, attended by headache, abdominal pains, and (early) by spontaneous diarrhœa; but absolute prostration does not come on till late, the patient rarely taking to bed before the seventh or tenth day. With the advance of the disease the diarrhœa increases, the discharges being for the most part liquid, copious, of a bright yellow color, devoid of mucus, occasionally containing altered blood. In reaction the discharges are alkaline, and contain a large proportion of soluble salts with some albumen. The fever may terminate favorably by a gradual restoration to health during the fourth week. The average duration of the illness is about twenty-three days. Death in the majority of fatal cases occurs towards the end of the third week. There are special symptoms sometimes associated with the characteristic lesion of this fever—namely, fulness, resonance, and tenderness of the abdomen; more or less tympanites, with gurgling in the iliac fossæ; and increased splenic dulness. The specific lesions are enlargement of the spleen and the mesenteric glands, with enlargement, ulceration, or

sloughing of the glands of Peyer and the minute solitary glands of the small, and sometimes also of the large, intestine.

Treatment and Management of Enteric Fever.—The management of a case of enteric fever resolves itself into two lines of practice, embracing,—(1.) Preventive measures. (2.) Therapeutic Treatment.

(1). Preventive Measures, or Measures for Checking the Spread of Typhoid Fever.—Whatever may be the view theoretically adopted regarding either the origin or the propagation of typhoid fever, it is satisfactory to know that, practically, medical officers can employ preventive measures which (to use the words of the late Dr. Lankester) "will cover the issues of both theories." If these are universally carried into effect, it is not too much to expect that this fever might perhaps soon become extinct. At all events, with the facts before us, it is unwarrantable to permit the great bulk of what escapes from the diseased intestine of typhoid fever patients to be let loose upon society, into the cesspool or sewer, or on the dung-heaps, in full possession of all their deadly power, without being first destroyed in the way to be presently recommended. "The grand fact is clear," writes Dr. Parkes "that the occurrence of typhoid fever points unequivocally to defective removal of excreta, and that it is a disease altogether and easily preventible." Typhoid fever ought therefore soon to disappear from every return of disease, whether in military or in civil life. The measures about to be specified have been made public mainly through the writings of Dr. William Budd; and, provided they are thoroughly and efficiently carried out, it is believed that the recurrence of typhoid fever may be entirely prevented. To enable us to judge of the extent of the infection to be destroyed, there are two elements to be taken into account,—First, The amount and duration of the intestinal discharge in each case; and, Second, The number of cases actually occurring. With regard to the first, Louis has found that the average duration of the alvine flux in cases of typhoid fever is fifteen days in mild cases and twenty-six days in severe cases. With regard to the second point—namely, the number of cases occurring—the Reports of the Registrar-General show that at least 100,000 to 150,000 cases of typhoid fever occur annually in England alone. In other words "every year in England more than 100,000 human intestines, diseased in the way already described, continue each, for the space of a fortnight or thereabouts, to discharge

upon the ground floods of liquids charged with matters on which the specific-poison of a communicable disease has set its most specific mark" (Budd).

The measures recommended for preventing the spread of this fever are founded on the power of chemical agents to destroy absolutely the material which contains or carries the specific virus of such communicable diseases. Assuming it, therefore, to be certain that the intestinal discharges in typhoid fever are the media of propagation of the disease, it is no less certain that, by subjecting the discharges on their issue from the body to the action of powerful decomposing chemical agents, they may be entirely destroyed or deprived of their specfic virus. The following details of procedure are suggested:—(*a*) All discharges from the fever patient should be received on their issue from the body into vessels containing a concentrated solution of chloride of zinc. (*b*) Two ounces of a caustic solution of chloride of zinc should be put in the night-stool on each occasion before it is used by the fever patient. (*c*.) All tainted bed or body linen should, immediately on its removal, be placed in water strongly impregnated with the same agent. (*d*.) The water-closet should be flooded several times a day with a strong solution of chloride of zinc, or of sulphate of iron or carbolic acid; and some chloride of lime should be also placed there, to serve as a source of chlorine in the gaseous form. (*e*.) So long as fever lasts, the water-closet should be used exclusively as a receptacle for the discharges from the sick after being thus disinfected. (*f*.) Pieces of rag should be used for wiping the remains of all discharges from the patient's body, and burned immediately after use. The Privy Council have now made the principle of this method an integral part of their "General Memorandum on proceedings advisable to be taken in places attacked or threatened by epidemic disease."

(2.) Therapeutic Treatment of Enteric or Typhoid Fever aims at reducing temperature and subduing vascular excitement, if these be in excess; restraining and moderating, but not actually suppressing or altogether checking the diarrhœa; stimulating and restoring the nervous system; obtaining a free excretion from the kidneys; and bringing about a gradual elimination of the morbid growth from the intestinal glands with as little ulceration as possible. To accomplish the first of these indications the use of *digitalis* has been especially recommended by Wunderlich. He considers that

it decidedly mitigates the febrile symptoms which are present in severe cases at the time when the ulcers begin to heal, and which often impede or prevent recovery. He advocates its use in the severe forms of the fever only, especially at a time when most danger is to be apprehended from the violence of the fever in the second week, when the evening temperature is at its highest (105° to 108° Fahr.), and when the remissions in the morning are slight; when the pulse is frequent, 110 to 120 or more. In mild cases it is superfluous. He finds that in the form of infusion it is easily absorbed by the intestines of patients suffering from fever; and, if given in a suitable dose, has most marked effects in subduing the rate of pulsation, and in reducing animal heat. Large doses of the infusion should be given without interruption until the full effect has been obtained,—

An infusion of fifteen or twenty grains of digitalis in eight or ten ounces of boiling distilled water may be consumed in twenty-four hours by adult patients.

It acts more rapidly on animal temperature than on the heart. For the first few days after its use the decrease of temperature is rather slight, but may afterwards become considerable; and after the temperature has been much diminished and again rises, it never attains its former excessive height. The full effects of the medicine are known to be brought about if the temperature is reduced 2° or 3° Fahr. in the evening; and the action of the remedy does not continue beyond one day after its use has been discontinued. The diminution of the pulse is slight at first, and occurs in some cases on the second day after the remedy, but mostly on the third day, or even later; and on the fourth or fifth day after the medicine has been commenced the rate of pulsation may be diminished by thirty to forty or fifty beats within from twelve to thirty-six hours. The pulse may continue to fall even below its normal velocity, and this reduction of pulsation may last for several weeks in succession. If the velocity of the pulse should decrease rapidly, the use of digitalis must be discontinued at once ("Arch. der Heilk., 1862, p. 116). Cold and tepid sponging, or the cold affusion, are remedies deserving of further trial for reducing the pulse and temperature. The oppressive headache may be greatly relieved by cold to the head; and in all severe cases the hair should be shaved off.

To restrain excessive diarrhœa, lime water mixed with milk in equal parts and taken as a drink, is found to be beneficial,

agreeable, refreshing, and nourishing. It is clear that the diarrhœa ought not to be altogether checked. Professor Gairdner, of Glasgow, is in favor of the French practice of giving saline laxatives rather than astringents; also of the diligent use of enemata to unload the bowels from below, where anything like abdominal distension has occurred. These enemata may be simply of warm water, to which a little aniseed is added; or the asafœtida enema may be given. Of the propriety of restraining excessive diarrhœa, there can be no question. Dr. Huss, of Stockholm, is of opinion that the diarrhœa during the first stage ought not to be arrested, but abated and mitigated—only if excessive. If it is suddenly arrested, meteorism is produced; and pains in the intestines or vomiting may supervene, with cerebral symptoms. The febrile phenomena are then increased. The diarrhœa is too copious or excessive if the evacuations exceed four or five a day, being of considerable quantity, and fluid. Such evacuations weaken the patient rapidly, and should be mitigated by mucilaginous drinks, such as rice-water, infusion of linseed, decoction of althæa officinalis or ipecacuanha in small and repeated doses. This latter remedy retards the peristaltic action of the intestines, and lessens the secretion from the mucous membrane. The dose must be regulated so as to avoid vomiting: and the feeling of nausea which is apt to follow the first dose soon disappears with continued use.

On the other hand, the highest authorities write: "Restrain diarrhœa and hæmorrhage in typhoid fever, and when you have fairly locked up the bowels, keep them so. Patients will go for four or six days, or even longer, without suffering inconvenience from this state of constipation." (Murchison, Todd). The benefits to be derived from the mineral acids—hydrochloric and sulphuric especially—are highly spoken of. From fifteen to thirty minims of the dilute acids may be given every three or four hours; and with each dose half a grain of quinine, as in the following prescription for an adult:

℞ Acid. Sulph. dil., vel Acid. Hydrochlor. dil., m xx. ad. xxx.
Quiniæ Sulph. gr. ¼ ad gr. i.
Syrup Aurantii, ʒ ss.
Aquæ Carui, ℥ i.
Fiat haustus, ʒa vel 4a hora sumendus.

If there be more than two motions in the twenty-four

hours, with marked prostration, astringents should be had recourse to (Murchison). A starch enema, containing from ten to twenty drops of laudanum, should be administered towards evening, and recourse may also be had to the following draught :

℞ Acid. Sulph. Aromat., m xxx.
Liq. Opii. Sedativ. (Battley), m iii.
Aq. Menth. Pip. ℥ i.; misce.

Fiat haustus, 4ta vel 6ta quaque hora sumendus.

If the mineral acids are not tolerated by the stomach, acetate of lead is worthy of trial, in doses of two or three grains in solution every four or six hours, with or without an eighth of a grain of morphia (Murchison). Alum dissolved in gum, to the amount of twenty-four grains in a day, which may be increased to one drachm, is best given in the form of alum whey, prepared by adding one drachm of alum to a pint of boiling milk, and then straining. Two ounces may be given after each motion of the bowels (Fouquier, Murchison). A seidlitz powder may sometimes check excessive diarrhœa, by altering the secretions, and is especially beneficial if there be much meteorism (Trousseau, Murchison).

The question, therefore, of checking excessive or encouraging moderate diarrhœa, is one which requires the careful study of each particular case ; and my experience in the treatment of typhoid fever leads me to recommend rather the restraining of excessive diarrhœa than either encouraging the action of the bowels or locking them up for days. The French practice of giving saline laxatives is not a safe one, and if the action of the bowels is deemed desirable, enemata will be found sufficient. Nitrate of silver, in doses of one to three grains, made into a pill, and taken every six or eight hours, or sulphate of copper, in doses of a quarter of a grain similarly given, are remedies most useful in the diarrhœa connected with atonic ulcers, after the fourth week of the disease (Bell, Murchison). If meteorism or tympanites prevails from the accumulation of air in the colon, it may sometimes be relieved by the passage of a long flexible tube by the anus, as far up the colon as it can be made to go easily. With regard to stimulation it is not decided how far alcohol is beneficial. The fever eventually is attended with much exhaustion, and is often protracted, yet typhoid fever does not seem to bear stimulation so well as typhus. The tendency to prostration is the only indication for its use ;

but stimulation must not be persevered in if the pulse is quickened by its use, the hectic flush made more manifest, the tongue made drier, or if delirium supervene. Food and sustenance are the real preventives of delirium, and the best stimulants when necessary. With regard to the maintenance of free action from the kidneys, it is to be observed that so long as the excretion of urea and uric acid is abundant, no diuretics are necessary; but whenever the amount of the solids falls greatly (which can be known at once with sufficient accuracy by a comparison of the urine passed in twenty-four hours with the specific gravity), means must be taken at once to increase, if possible, the urinary elimination. The warm bath, with repeated small doses of the alkaline carbonates, or of the nitrate or bitartrate of potash, will often effect an increased elimination (Parkes, l. c.)

To accomplish the last indication—namely, to influence the elimination from the intestinal glands, by direct local action on the intestinal membrane—Wunderlich and Parkes especially advocate the use of calomel, if it can be given before the ninth or tenth day. The late Dr. Anthony Todd Thomson used to give it; and, from the observation of many cases under the care of this physician, as well as from his own experience, Dr. Parkes considers that calomel is a medicine to be strongly recommended in typhoid fever. But it must not be given later than the tenth or eleventh day, and at no time in large doses. In the great majority of cases where it can be given during the first week and before the occurrence of much diarrhœa, the course of the disease is rendered milder and shorter. Such is now the recorded experience of Wunderlich, Niemeyer, Parkes, and Wood. One or two grains twice a day is enough, although Wunderlich gives one to five grains twice daily; but five grains is considered by Dr. Parkes to be too large a dose. Dr. Wood of Philadelphia bears testimony to the benefit to be derived from mercury about the seventh or ninth day of the fever. He believes "it tends in some degree to arrest the progress of the disease in the glands of Peyer, and to promote resolution of the inflamed patches. He prefers minute doses of the blue pill mass—a grain every two hours—till the mouth is slightly affected, associated with small doses of ipecacuanha, when the stomach is not irritable. The beneficial effect of this combination is shown by the tongue becoming moist, the skin relaxed, and the symptoms generally being ameliorated. Twelve grains of blue pill mass are to be combined

with two grains of ipecacuanha powder, and with two grains of opium powder. The whole is to be divided into twelve pills, one of which may be taken every hour, or every hour and a half, or every two hours (Wood, "Practice of Medicine," Vol, I., p. 345, 4th edition). Calomel is, however, contra-indicated if the diarrhœa is excessive, or if there should be excessive pains in the bowels, with early and violent meteorism. It is also not proper to be given if the condition of the patient is anæmic, or if there is a decided hæmorrhagic diathesis. It is most useful as a restorative of the intestinal functions in cases where the tongue is dry and coated, where thirst is absent, and when the urine is cloudy and of low specific gravity. If the first dose is vomited, the administration must be repeated. Calomel has no direct effect on the pulsation or respiration, nor on the cerebral functions; but its beneficial influence is very decidedly appreciable by the modifications of temperature which it induces.

No general rules can be laid down to guide the treatment of the intercurrent phenomena or accidents of the disease. Combinations of remedies must be adapted to correct the several functions which may be simultaneously deranged, so that treatment must be varied according to the functions mainly implicated or suspended, and to the degree of their affection. Abdominal pains and meteorism may be relieved by mustard poultices, or turpentine stupes may be applied, followed by simple hot water fomentations. After these remedies have been used, water compresses over the abdomen tend to lessen the tension and the gurgling in the intestines, and to diminish the tenderness on pressure. They counteract the inclination to meteorism, and lessen excessive diarrhœa. Dr. Huss believes also that the ulcerations in the ileum are prevented from spreading, and that perforations of the intestine have been of much rarer occurrence since he commenced to use these compresses. The compress, after being soaked in warm, but not hot water, is well wrung, and applied so as to cover the whole abdomen; and it must be changed two or three times a day, according to its tendency to dry. The compress is composed of four to eight double folds of coarse linen, and is to be laid over the whole abdomen, and afterwards overlaid with a cover of oiled skin or india-rubber stuff, to prevent too rapid evaporation. The compress should fit as closely as possible, and care must be taken that it be not displaced, otherwise air enters between the skin and the compress, so that cold, instead of a moist

heat, is produced. These compresses may remain untouched as long as they are moist and warm; and they may be employed on the chest as well as on the abdomen should capillary catarrh or pneumonia supervene.

Hæmorrhage from the bowels, partly fluid and partly in clots, evacuated with the stools, is a symptom of grave import; and one urgent aim of treatment is to arrest the bleeding. Huss found the sugar of lead most serviceable, administered by the mouth, and also by clysters. By the mouth, two grains may be given every half-hour, and even every quarter of an hour; and it is best given dissolved. Twenty-four grains of crystallized acetate of lead, being dissolved in one drachm of dilute acetic acid, to which six ounces of distilled water is added,—a table-spoonful of this solution may be given every half-hour. At the same time a clyster may be administered, composed as follows:—Ten to fifteen grains of acetate of lead are to be dissolved in four ounces of distilled water (warm), to which twenty to thirty drops of tincture of opium may be added; and the administration of such a clyster may be repeated in four or six hours if required. Pieces of ice may also be swallowed now and then; and even crushed ice may be applied, inclosed in a bladder, over the abdomen. If bleeding from the nose is not arrested by the use of vinegar and cold water injected up the nostrils, nor by the use of cold water compresses applied to the nose, plugging by the posterior nares must be had recourse to. Turpentine is a most valuable remedy in hæmorrhages, and in the stage of ulceration. It was originally recommended by Dr. Graves, and is highly spoken of by Drs. Huss, Wood, and Murchison. It may be given in all cases where the tongue is dry, and when "instead of cleaning gradually from the edges and tip, it often parts with its fur quickly, and in large flakes—generally, first, from the middle or back part of the surface, which is smooth and glossy, as if deprived of its papillæ. There is also generally an increase of the tympanites, and the ulceration of the ileum seems to be attended with great dryness of the tongue." Under these circumstances Dr. Wood gives the oil of turpentine in doses of five to twenty drops every hour, or every two hours. It is best administered in an emulsion with gum-arabic, loaf sugar, water (Wood); or in an emulsion with the yolk of an egg and honey or mucilage (Huss). Amelioration of the symptoms may be observed in twenty-four or forty-eight hours—the tongue becoming more moist, and covered with a white fur—disten-

sion of the abdomen ceases to progress, and after a time diminishes. The use of the oil should be continued under these circumstances; but the dose should be gradually diminished.

Tonics and stimulants may be absolutely essential on account of debility attending the advanced stage of the disease, generally about the third week. When the pulse is slow and feeble, the skin cool, the tongue and teeth encrusted with dark sordes, at an advanced period of the fever, then stimulants are obviously necessary. But even when the pulse is feeble, but yet frequent, and the skin hot, stimulants are even then known to be of service. It is necesssry to administer them in every case with great caution, and to watch the effects constantly and closely. If their use is found to augment the heat of the skin, or to increase the frequency of the pulse, or to aggravate the delirium or stupor, it is then necessary to suspend their use. They are known to be doing good service, however, if they lessen the frequency of the pulse, and increase its fullness and strength; if the skin becomes cool and moist; if the delirium is subdued or moderated, and especially if refreshing sleep be procured. Dr. Wood recommends the use of wine whey, prepared by adding one quart of good sherry wine to two quarts of boiling milk, and straining after coagulation. Of this a tablespoonful or more may be given every hour or every two hours. If the strength is greatly reduced, it may be necessary to give pure wine or brandy; or even sulphuric or chloric ether in cases of great prostration. Opium is also a useful stimulant. It may be given when the pulse is not full nor strong, and when cerebral symptoms do not exist. In the later stages it may be given in doses of half a grain, or a grain, every four, six, or eight hours. It is known to be acting beneficially when it promotes sleep, subdues nervous excitement, and induces gentle perspiration. Carbonate of ammonia is objectionable, as it may irritate the bowels and increase the diarrhœa.

The diet is of the utmost importance to be attended to in cases of typhoid fever from the very commencement of the disease. It ought then to be both food and drink combined, in the form of a light nutritious liquid, such as meat fluid, soup, eggs, and milk. Barley-water, rice-water, toast and water, thickened more or less with solutions of tapioca, sago, arrow-root, the juice of sweet fruits, or the very soft pulp of fruits, or the pure jelly of ripe fruits; but fruit in its crude

state is to be strictly withheld. It is necessary, as a rule, to give food at certain intervals and in certain quantities. A wine-glassful should be given at least every two or three hours, according to the state of digestion and the demands upon the strength of the patient. It may be that the patient is unable to swallow, from the dry and shrivelled state of his tongue. Before offering him food or drink, therefore, the nurse should put a teaspoonful of lemon juice and water into his mouth. She must then wait a minute or so, until the fur upon the tongue and mouth is softened and moist, after which the patient will often drink or take his food with ease. The patient ought to have his mouth regularly washed out with a linen rag, saturated with water, in which a little soda has been dissolved. Milk in small quantities frequently repeated will be found an excellent diet; and animal broths and jellies may ultimately be given. The extractum carnis, as prepared by Liebig or Valentine, is a most valuable nutriment for typhoid fever patients. The best drink is pure spring water, or soda-water, or barley-water, or water that has been mixed with oatmeal, but is free from any particles of oats. The patient generally desires and requires to drink freely, in order to replace the loss of fluid by perspiration and diarrhœa; and, in the advanced stages of the fever, plenty of drink should be given by the nurse.

The utmost caution is necessary as to diet and aperients during convalescence; first, as to opening the bowels, castor-oil or simple enemata are the only means which should be resorted to; secondly, as to diet, no flesh meat should be allowed till at least seven days after all the febrile phenomena have passed away, and the food should be as free as possible of excrementitious matter. Malt liquors should not be taken before food.

Enteritis.—*Definition.*—Inflammation of the small intestines generally, or limited locally.

Treatment.—The treatment of enteritis and intestinal catarrh, when not arising from a morbid poison, is by leeches to the abdomen, gentle purgative medicines, combined with an opiate, fomentations, and purgative or opiated enemata. After the inflammation has subsided, mild tonics, as the compound tincture of gentian, with nitro-muriatic acid, may be substituted, with the prospect of recovering the lost tone of the parts. When catarrhal diarrhœa exists, if congestion prevails, connected with the hepatic region, a cathartic dose

of calomel, followed by castor-oil, may be necessary. If the stools indicate an acid reaction, magnesia may be given with advantage. When membranous films or shreds of coagulable lymph are passed, electro-galvanic applications over the abdomen and dorsal spinal region, combined with creasote or tar, in the form of a pill, is worthy of a trial (Simpson, Cumming, Wood). Next to those remedies are such as determine towards the skin. For this purpose combinations of Dover's with James' Powder, or a solution of tartar emetic with laudanum, are the most useful medicines, and their beneficial action may be aided by the use of the warm bath, and a flannel roller applied with firmness round the abdomen (Craigie). Where hyperæmia is excessive, accompanied by moderate transudation from the intestine, as after extensive burns, accompanied by great pain, cold external applications are suitable, as well as in the severer forms of catarrhal enteritis (Niemeyer). The best mode of applying them is by cloths wrung out of cold water and laid over the abdomen. In the chronic form, combined with obstruction, irritating and warm compresses are most suitable Preissnitz's compress is extensively used for this purpose. A wet towel in folds, covered with a dry one, is laid over the abdomen all night, to be renewed several times daily. The greatest care ought to be given to the management of the diet. It ought to be strictly antiphlogistic, consisting of slops and light puddings. Animal food must be withheld, and only permitted in the form of soup. The safest diets are those of arrow-root, sago, tapioca, barley-meal, gruel of oatmeal, sowens, [" The husk and some adhering starch separated from oats in the manufacture of oatmeal are sold in Scotland, under the inconsistent name of 'seeds.' These, if infused in hot water, and allowed to become sourish in this state, yield on expression a mucilaginous liquid, which, on being sufficiently concentrated, forms a firm jelly known by the name of 'sowens.' Not less than a quart of the seeds are to be rubbed for a considerable time with two quarts of hot water, after which the mixture is to be allowed to rest for several days until it becomes sour. It is then strained through a hair sieve, and the strained fluid left to rest till a white sediment subsides. The supernatant fluid is to be poured off, and the sediment washed with cold water; after which it may be either boiled with fresh water, stirring the whole time it is boiling, or it may be dried and prepared when convenient in the same manner as arrow-root. It may

be eaten with wine, milk, or lemon-juice and sugar."—Pereira, "On Food," p. 326.] barley water, toast water, burnt oatcake water. This last-named substance, used as a drink, is said to allay irritation and morbid sensibility of the bowels (Craigie). When the abdominal pains subside, and stools become less frequent and the appetite increases, the diet must be still more scrupulously attended to. Oatmeal porridge boiled to the utmost degree of pulpiness, and not too consistent, is one of the best of diets, which may be alternated with ground rice alone, or combined with barley flour, all of which may be eaten with diluted milk from the cow or with milk undiluted of town-fed cows.

Epilepsy and Hystero-Epilepsy.—*Definition.*—A complex nervous state, characterized by chronic convulsive attacks not due to organic brain disease, tonic at first, but which subsequently become clonic, and ultimately impede the respiratory process. The attack, lasting from an imperceptible period to two, twenty, or more minutes, is followed by some exhaustion and sleep. The expression of the epileptic state varies from simple vertigo to the most severe paroxysm, a momentary suspension of consciousness, a fixity of gaze, a totter of step, and a confusion which appears and disappears almost instantaneously, which the patient only can recognize. The cases comprehend—(1.) Simple epilepsy, or epilepsy proper, in which there is a paroxysmal loss of consciousness as the first, or nearly the first phenomenon in the paroxysm, and with this loss of consciousness there is more or less spasm of muscles (including those of the muscular coats of the arteries). (2.) Epileptiform seizures, in which there is no evidence of organic brain disease, but developments of the movements normally represented in some particular parts of the cerebral cortex. (3.) Hystero-epilepsy (Hysteria major of Charcot, the Hysteroid of Dr. W. Roberts, or the Co-ordinated Convulsions of Gowers) which presents, with loss of consciousness, varied convulsive momements of more or less co-ordinated spasm, spasmodic movements of a quasi-purposive character, opisthotonos, emprosthotonos, and the like, forming a series from simple hysteria to true epilepsy. The co-ordinated spasm may exist alone, or may be combined with epileptoid phenomena, or with true epileptic symptoms.

Treatment.—The treatment divides itself into what is to be done during the paroxysm, and subsequently during the intervals.

When adults are laboring under the paroxysm, little, in general, can or ought to be done except bringing the patient into the fresh air, taking off what may be around the neck, and baring the chest, together with the more imperative duty of preventing the patient doing himself any injury. Bleeding, so often had recourse to, is rarely found beneficial; except, however, as regards females, in cases of suppressed menstruation. If, however, the paroxysm be greatly prolonged, the application of cold to the head, and opening the temporal artery, where symptoms of excessive cerebral congestion are obvious, may be of some service, as in cases recognized as plethoric. It is of great importance to shorten the paroxysm as much as possible. Dr. Sieveking recommends that a trial be made of the galvanic current during the fit. The conductors should be moistened sponges, so as to insure the passage of the current to the deeper-seated tissues. The inhalation of ammonia or chloroform, or nitrite of amyl; or a dose of sal-volatile, or of ether, has been found useful. The nitrite of amyl not only postpones, but altogether prevents epileptic seizures. "A vinaigrette, or small stoppered bottle, containing a sponge soaked in nitrite of amyl, and carried in the pocket, so as to be at hand, will be found a safeguard to many sufferers from epilepsy. Wherever there is time after the initiation of the coma, and before the development of the proper phenomena of the fit, to breathe the nitrite of amyl freely, the fit, with its terrible accompaniments and disastrous sequelæ, may in many instances be not merely postponed, but abolished," (Dr. Crichton Browne, "West Riding Asylum Reports," Vol. III., p. 154).

The paroxysm over, the probable exciting cause of the paroxysm should be investigated, and, if possible, removed; the state of the bowels should be particularly inquired into and regulated, and leeches should be applied to the temples if the headache be severe. In women, also, the catamenia, if defective or excessive, should be remedied. These few simple rules are of the first importance, not only as removing the immediate inconveniences incident to the attack, but also as a means of prolonging the interval, and perhaps preventing its future occurrence. We must take into account, and search out for all causes which may have contributed to the malady. In assuming the charge of an epileptic, it is necessary to commence first by regulating the external relations of the patient, his habits, and his bodily health, so that every suspicious condition of his life to which the origin of the dis-

ease can in any way be ascribed may be corrected (Niemeyer). In a few instances the patient, by the adoption of certain rules, is cured, and the prevailing principles of treatment in epilepsy mainly consist in local derivation, or counter-irritation directed to subdue cerebral congestion, and in the use of such tonic remedies as may be indicated by a careful inquiry into the condition of the individual organs, and how their several functions are performed. The intensity of the headache suggests more or less active counter-irritation by blisters, dry or wet cupping, ointment of tartrate of antimony, setons, or even the actual cautery applied under chloroform to the nape of the neck.

The medicinal remedies that have been employed are valerian, iron, zinc, quinine, musk, opium, asafœtida, the iodide and bromide of potassium, camphor, and the preparations of turpentine. The nitrate of silver, once esteemed a specific in this complaint, has not only failed, but, by occasionally staining the rete mucosum of a dingy hue, has often permanently disfigured the patient. Of the long catalogue of remedies which has been mentioned, each medicine is perhaps useful for a few weeks; but after that period its good effects are, for the most part, lost, so that it would appear to act rather mentally than physically in removing the cause and altering the morbid tendency.

"Whatever remedies or course of treatment you pursue, do not appear to despond, or use any other language to the patient than that of hope. Avoid extravagant promises, as inconsistent with that love of truth which ought to characterize every professional man; but unless you have the strongest evidence against it, do not yourself, nor allow your patient, to abandon hope" (Dr. Todd, "Clinical Lectures," *Medical Times*, August 12, 1855.

The employment of purgatives is indicated for the removal of waste matter, to act as a derivative from the head, to expel foreign matters or worms from the intestines, and generally to regulate the bowels; and the laxatives most suited to epileptics are rhubarb, compound colocynth pill, aloes, castor-oil, taraxicum, sulphur in combination with magnesia or rhubarb; and the Pullna, Hunyadi Janos, Friedrischall, or Carlsbad bitter waters. Half a tumblerful or less, taken in the morning, generally produces a full pultaceous evacuation in two or three hours. The judicious use of an anthelmintic sometimes frees the patient from the disease as well as from a tapeworm or other parasite, which not

unfrequently may be the eccentric source of the fits. Independently of its anthelmintic properties, however, both Drs. Watson and Sieveking strongly recommend the use of turpentine. It may be given in half-drachm doses every six hours.

If a scar, foreign body, tumor, or neuroma, be found pressing on a peripheral nerve, its removal by operation may cure the epilepsy. Dr. Echeverria has recently given a table of 145 epileptics who were trephined, with the results, which furnishes irrefragable proofs of the utility of trephining in epilepsy produced by injury to the cranium (*London Med. Record*, May 15, 1879, p. 169).

The preparations of iron and zinc are the most useful tonics; and for the general principles on which iron may be administered, the reader is referred to the pages on Anæmia.

Dr. Trousseau believed that belladonna is the least inefficacious of all the remedies for epilepsy, and from its use he not only obtained alleviation and improvement in many cases, but was able to count upon a certain number of cures (Clinique Medicale, t. ii., p. 95). His formula is:

Atropiæ Sulphatis, gr. j.; Sp. Vini Gallici, mc. M. One drop of this solution is to be given every day in the morning, if the attacks happen in the daytime; or in the evening, if during the night; the dose to be increased by one drop for each succeeding month, and to be always taken at the same period of the day. It should not be pushed beyond the first toxical indications. If the dose is not well borne, it should be increased only every second or third or fourth month. When improvement is apparent, the quantity given in the last dose should be continued for some time, and then gradually lessened, and finally stopped, to be, after an interval, resumed.

A year is scarcely sufficient to test the influence of belladonna, and if in the succeeding year some improvement follows, the treatment is to be maintained for two, three, and four years (l. c., p. 95). Dr. Trousseau, however, in practice seems to have adopted a mixed treatment, giving belladonna in the morning, with the nitrate of silver, the sulphate of copper, or the lactate of zinc, in the evening, alternating these last every ten days. The following are his modes of administration:

℞. Argenti Nitratis, gr. ij.; Pulv. Acaciæ, Aquæ distil., aa q. s. Div. in pil. x. One every night. Or,

℞. Cupri Sulphatis, gr. xx.; Pulv. Sacchari, 3 j. Div. in pil. xx. Two every night. Or,

℞. Zinci Lactatis, 3 j.; Pulv. Sacchari, 3 ij. Div. in pil. xx. One every night. Or, the zinc may be made into pills with the conserve of roses.

Within the past ten years the bromide of potassium has been largely used in epilepsy, and the testimony to its utility in the disorder is uniform and strong. Dr. C. B. Radcliffe writes:—"In the summer of 1858 I began to give this medicine almost promiscuously in cases of epilepsy and epileptiform disorder, and from that time to this (1864) I have been continually finding fresh reasons for persevering in the practice. . . . The conclusion at which I have arrived is, that bromide of potassium is the only remedy in epilepsy upon which most dependence can be placed." The late Dr. Bazire, in a note to his translation of Trousseau's Clinical Lectures, speaks thus of the experience of the physicians of the Hospital for the Epileptic and Paralyzed in London, and of his own, with this remedy:—"The results obtained are such as to warrant the conclusion that it is infinitely superior to all other remedies that have been recommended against epilepsy. It is certainly far superior to belladonna in its power of diminishing the frequency and severity of epileptic attacks and epileptiform seizures in general; nay more, of warding off the attacks, lengthening the intervals between them, and, in some cases, of bringing on a cure" The most recent, and a very high authority, Dr. J. Russell Reynolds, in his excellent article on Epilepsy (System of Medicine, Vol. II., 1868), says:—"Bromide of potassium is the one medicine which has, so far as I know, proved of real service in the treatment of epilepsy. In large doses it has scarcely ever failed to give much relief. Given in doses ranging from ten to thirty grains, three times daily, it has had these effects:—In some cases it has completely cured the patient, and the cure has been permanent for years, and is so now. In others it has arrested the attacks, so that none have occurred for periods varying from a few months to two or three years; but on the omission of the medicine the seizures have returned. In such cases the attacks have again ceased on the readministration of the medicine. In a third series of cases it has diminished the frequency and severity of the seizures, but has not removed them altogether; the patients, while taking the bromide, have had one-half or one-third the number of fits to which they were habituated. Such patients have gone back to the old frequency of recurrence when the drug has been omitted,

and have again improved when it has been readministered. In a fourth but very much smaller number, it has been good for a time, and then has appeared to cease; and in a fifth, and yet smaller proportion, it has been apparently without any appreciable effect. . . . It is to be demonstrated that there is yet something 'specific' in the action of bromide of potassium." Dr. Voisin, of the Salpetriere Hospital says, that it does not cure absolutely, but diminishes the disorder in a marked degree, lessening and even suppressing the nervous erethism (Bul. de Thérapeutique, 1867). Dr. Edward Fox reports fifty-two cases in which bromide of potassium, in not less than twenty-grain doses, was found "satisfactory," and ten cases in which it wholly failed, in one of which belladonna was more successful (St. George's Hospital Reports, Vol. II., 1867). Dr. Brown Séquard, than whom few have had as large experience in this disease, began to use the bromide of potassium in large doses towards the end of 1860. He writes:— "I was soon led to associate the iodide of potassium with the bromide: and it became almost at once evident that, in most cases of epilepsy (whether idiopathic, symptomatic, or sympathetic, but especially in that form, which is much more common than it is admitted to be, in which that convulsive affection is allied with or due to, a congestion of the base of the brain or its meninges), these two remedies did more good than either of them alone. By the end of 1861, after I had ascertained that the bromide of ammonium has a special therapeutic influence in cases of congestion of the medulla oblongata, and of the upper parts of the spinal cord, I began to associate that salt with the bromide and iodide of potassium in the treatment of epilepsy. . . . That mode of treatment has been submitted to an extensive trial, which leaves no doubt as regards its superiority. Although certainly it does not often cure permanently, it usually diminishes considerably, the violence and the frequency of the attacks, and is much more successful than the various modes of treatment by the best remedies against epilepsy, such as atropine or belladonna, the sulphate of copper, the nitrate of silver, strychnine, valerian, zinc, digitalis, or the means of counter-irritation by applications of ice, moxas, croton oil, &c., on the spine or head" (Lectures on the Diagnosis and Treatment of Functional Nervous Diseases, 1868, pp. 81, 82). His usual prescription is:—

℞. Potassii Iodidi, ʒ j.; Potassii Bromidi, ℥ j.; Am-

monii Bromidi, ʒ ijss.; Potassæ Bicarbonatis, ℈ii.; Infus. Calumbæ, f ℥ vj. M.

A teaspoonful before each of the three meals, and three teaspoonfuls at bedtime, in a little water.

Dr. Ayer and others have preferred the sodium salt instead of the potassium salt, as it does not seem to have the same depressing effect on the cardiac muscle in large doses as the iodide of potassium has. It may be given in from 10 to 30 grains three times a day. Dr. James Ayer's mode of prescription is as follows:—

℞. Sodii Bromidi, Iodidi Bromidi, Ammonii Bromidi, aa ʒ iii.; Potassii iodidi, Ammonii iodidi, aa ʒ ss., Ammoniæ sesqui-carbonatis, ʒ i; Tincture Calumbæ, f ℥ iss; Aquæ distillata, ad. ℥ viii.; misce.

The full dose of this compound is a drachm and a half before each meal, and three drachms at bed-time. At the outset the patients are informed that regular treatment must go on for two years, after which the dose must be left to the patient's discretion, when, except for averting threatened attacks, full doses are no longer advisable. As a tonic, drachm doses of the following mixture may at the same time be taken after each meal:—

℞. Strychniæ sulphatis, gr. i.; Acidi sulphurici diluti m x.; Aq. distillatæ, f ℥ iv.; misce.

The strychnia may be given in smaller doses to begin with. In all cases the diet must be carefully regulated (*Lond. Med. Record*, March 15, 1878, p. 128).

In syphilitic epilepsy, the iodide of potassium is increased to five or six drachms. Where the attacks begin with violent laryngismus, the bromide of ammonium is raised to three or four drachms, and the bromide of potassium diminished by two drachms. The following rules have been laid down as to the use of these remedies:— The quantities of these medicines to be taken daily should be large enough to produce an evident, though not complete, anæsthesia of the fauces and upper parts of the pharynx and larynx, this quantity varying, with the patient's idiosyncrasy, from forty-five to eighty grains of the bromide of potassium, and twenty-eight to forty-five grains of the bromide of ammonium, when only one of these salts is given, and a lesser quantity of each, but especially of the ammonium, when given together (Clymer).

These remedies very rarely produce a good effect in epilepsy without causing an acne-like eruption in the face, arms,

neck and shoulders; and there seems to be a positive relation between the intensity of the eruption and their efficacy. It is important, therefore, when there is no eruption, and also when it begins to disappear, to increase the dose, unless the dose given in the twenty-four hours is already so large that any increase brings on great sleepiness in the daytime, a decided lack of will and of mental activity, dulness of the senses, drooping of the head, considerable weakness of the body, and a somewhat tottering gait. It is never safe for a patient taking these drugs to be even one day without them, so long as he has not been quite free from the attacks for at least fifteen months.

Iron and quinine should be given in epilepsy, unless the ailment is complicated with anæmia or malarial poisoning, except, perhaps, in the form of the double salt of the citrate of iron and strychnine.

A gentle purge every five or six weeks maintains the power of the bromides (Brown-Séquard, l. c., pp. 84–86).

In night-seizures the bromide of potassium would seem to have less influence than in day-fits (Duckworth, Williams).

The debilitating effect of the bromides ought to be lessened by the use of strychnine, arsenic, the oxide of silver, ammonia, cod liver oil, cold douches or shower-baths, and a nourishing diet. There is an antagonism between strychnine and the bromides, and when prescribed together, the dose of the bromides must be increased.

Dr. E. C. Seguin has also called attention, in the New York Medical Association, to the evil effects which may follow the abuse or over-use of the various bromides. The most important of these results are—conditions of impaired nutrition, and of nervous atony, which continued for months or even years; general debility, with the weak slow pulse and coldness of the extremities; tendency to stupor, slight difficulty in speaking, the bromic breath, and acne. Regarding the method of using the bromide salts in the treatment of epilepsy and other neuroses, he lays down the following rules:—(1.) The prolonged use of bromides is contraindicated by congenital feebleness, but they are all borne by persons of fairly full habit, and good nervous power. (2.) The bromides are indicated in cases of abnormally great irritability of the nervous system in its motor (muscular and vaso-motor) and ideational tracts; (3.) These contraindications are to be less regarded in the management of that formidable neurosis, epilepsy. (4.) Epilepsy is to be

regarded as the only disease which justifies the deliberate production of a degree of bromism for its cure.

Dr. Seguin's method of prescribing the bromides in the treatment of a case of "idiopathic" epilepsy is the following. Two solutions are employed.

℞. Potasii bromidi, ʒ i.; Ammonii bromidi, ʒ ss. Aquæ fontanæ, ʒ vij.; misce: to be given by the teaspoonful; and, ℞. Sodii bromidi, ʒ i.; Ammonii bromidi, ʒ ss.; Aquæ font., ʒ vij.; misce: to be given by the teaspoonful.

The quantity administered is to be so divided as to give by far the largest dose in the evening. The bromide is to be cautiously increased, still keeping the nocturnal dose the largest, until slight bromism is produced; which is usually necessary to be maintained for months, but just as little is to be given as may prevent the attack. The precise quantity required must be studied in each case. Children tolerate the bromides, as well as the iodides, in relatively large doses. It is of importance to thoroughly dilute the bromides in order to facilitate their absorption—the dose to be taken in a wineglassful or half a tumblerful of water. Under no circumstances should the bromides be discontinued; they may be diminished, but not stopped entirely; they should be continued at least three years after the last attack. The adjunct treatment consists in the use of measures to prevent the acne to a certain extent, such as the occasional use of arsenic, sulphur-ointment, mercurial plaster, alkaline lotions; to correct the general debility of slight paresis, by the use of strychnia, nux vomica, oxide of zinc, and quinia: to relieve the dizziness by the inhalation of nitrite of amyl, by stimulants, and quinia; regulating the patient's diet and hygiene, and the use of cream, cod-liver oil, iron, quinine, phosphorus, strychnia, with nitro-muriatic acid. In certain cases such medicines as acted more directly upon the morbid state of the nervous centres were associated with the bromides, and favorite among these was belladonna (*London Medical Record*, June 15, 1877, p. 221).

Picrotoxine has been found to possess anti-convulsive properties. It was originally recommended by Dr. Crichton Browne in the treatment of epilepsy, and his experiments have been recently confirmed by Planat.

Clinical familiarity with epilepsy, and a history of its therapeutics go to show that there are no grounds for belief in any specific against this affection, and the physician who promises a cure, or even relief, by means of any one remedy in this disorder, runs the risk of damaging not only himself, but

his art. It cannot, however, be doubted, that, in a certain number of cases of epilepsy not apparently caused by any coarse cerebral lesion, the severity and frequency of the seizures may be greatly abridged, so that the sufferers may be brought to enjoy often a great degree of immunity and comfort. The proportion of such cases to the whole number afflicted is, perhaps, few, but it is still sufficiently numerous to give hope and encouragement to further trial. Such results, however, can only be surely gained by means which will increase and develop the vital power generally. It should be borne in mind that tonic treatment does not alone consist in the administration of a tonic drug. Whilst many cases of epilepsy demand the use of tonic medicines to fulfil certain present indications, they should in no sense be looked on as a curative, or even remedial, but only as adjuvants. and when they have done their work should be laid aside. Of this class of remedies none, perhaps, is more valuable than arsenic, given in minute doses. Where there is anæmia, iron or manganese is required. But a general restorative system must be adopted and persevered in.

The diet of the epileptic should not consist of much meat (nor much nitrogenized food), nor much of anything. It ought to be spare diet—simple and unstimulative, and to the absolute exclusion of alcohol. After a prolonged investigation on the influence of diet in epilepsy, carried on at the West Riding Asylum, by Dr. John Merson, he came to the conclusion that a farinaceous diet is likely to be more useful in the treatment of epilepsy than a nitrogenous one (*West Riding Lunatic Asylum Reports*, Vol. V., p 1). The food should contain, as soon as the state of the digestive organs will permit, a certain portion of fatty and oily constituents, and in most cases cod-liver oil may be given with advantage. The hypophosphites, as a vehicle for the introduction of phosphorus into the system, would seem to be of service in improving the general nutrition.

The maintenance of the activity of the cutaneous function is of the first importance. In the beginning an occasional vapor or hot-air bath may be taken ; afterwards tepid salt or fresh-water baths, followed by a general grooming of the skin. Exercise in the open air, gymnastics, both measured by the strength of the patient, are to be insisted upon, as well as such means as will promote the expansion of the lung tissue. With physical training, mental and moral training should be combined.

Such are the general principles of the rational or restorative treatment of epilepsy, which, it is believed, will give a larger measure of success than a reliance upon any one of the innumerable specifics that have had questionable and temporary repute. If a successful issue is to be had, perseverance and confidence, both on the part of the physician and the patient, are chief conditions of success, and this should be fairly stated at the outset to the sufferer and his friends.

Ice applied to the cervical spine has caused the severe paroxysms of hystero-epilepsy to cease (Gowers).

Equinia—*See Glanders.*

Equinia Mitis.—*Definition.*—A pustular eruption, produced by the contagion of matter from a horse affected with the grease.

Treatment.—The greatest relief to the constitutional disturbance is obtained by frequent purgation with aloes combined with ammonia, and such moist local applications as may relieve pain.

Ergotism.—*Definition.*—A train of morbid phenomena produced by the slow and cumulative action of a specific poison in a fungus peculiar to wheat and rye, and which gives rise to convulsions, gangrene of the extremities, and death, or to symptoms of ill-health.

Treatment.—Considerable differences of opinion prevail regarding the treatment of this dietetic disease. The cause, in the first instance, must be ascertained and removed; and to obviate the effects it has already produced, the constitutional treatment must be directed to improve the state of the blood. Tonics and stimulants are to be administered, after a free employment of evacuant remedies, to clear out the alimentary canal completely. The chlorates of potash and of soda, with antispasmodics, tonics, and narcotics, are especially indicated. Camphor, musk, ammonia, capsicum, may be particularly mentioned; and the strength of the patient is to be supported by light, nourishing and wholesome food.

Erysipelas.—*Definition.*—An acute febrile disease, characterized by a peculiar inflammation of the integument, tending to spread indefinitely, and even to involve the areolar tissue beneath the skin. It is accompanied by severe general symptoms.

Treatment.—"Experience has proved that general bleeding has no other effect than to blanch the eruption, without

notably abridging its duration;" and from the nature of the disease blood-letting in any form is not to be thought of. Rest, saline laxatives, cooling drinks and low diet are the elements of treatment in mild and simple cases. An emetic is useful at the commencement; and I have seen, in the practice of an eminent surgeon (Mr. Syme) that frequent resolution of an erysipelatous attack has followed an antacid laxative, such as forty grains of rhubarb to sixty of bicarbonate of soda, divided into twelve powders, one to be taken every six hours, together with the counter-irritation of a mustard poultice over the stomach. Laxative and cathartic remedies are to be selected and apportioned according to the violence of the attack and its nature, as tending to the unfavorable results of the specific inflammation already noticed. Calomel is a most valuable purgative, as a sedative in febrile disturbance, especially when followed by castor-oil, or the common black draught. The indications to the use of certain remedies, as given in the treatment of scarlet fever, are equally applicable here. If the febrile state is not subdued, antimonials are of great service; and so far as they are diaphoretic in their action they tend to subdue the vascular excitement. If symptoms of nervous depression ensue, opium, or opium and ipecacuanha are indicated, also wine and quinine, ammonia and camphor, in asthenic cases with a tendency to a typhoid state. The tincture of the perchloride of iron, in doses of ten to thirty minims, three, four, or five times a day, in water, infusion of quassia, or calumba, is now also a remedy much in use, and it may be alternated with the syrup of the phosphate of iron, in doses of a teaspoonful three or four times a day. In cases where the system is obviously gouty or rheumatic, and where the joints are affected, colchicum with saline diaphoretics are the most efficient remedial agents. Local applications are potent for good or evil, and must therefore be used with great caution. The effects seen on the skin do not constitute the whole disease; and if the development of these processes on the cutaneous tissue is imprudently interfered with, there is imminent danger to internal organs. To check the advance and prevent the encroachment upon new territory, rather than to subdue it, if already in possession, ought to be the sole aim of local treatment, and to mitigate the local pain and uneasiness. Bland mucilage, such as that of viscid linseed tea, from which light muslin cloths have been steeped and spread over the inflamed surface, sometimes affords relief. Dry flour, or rye-meal,

frequently dusted from a dredge-box over the erysipelatous patches, are soothing applications. A thick layer of cotton-wool dusted with tutty powder is also a soothing application to the part. A lotion of nitrate of silver painted daily over the affected parts sometimes gives great relief (one scruple of the nitrate to an ounce of water, to which ten drops of dilute nitric acid are added). Dilute nitric acid should, at the same time, be given internally, if typhoid symptoms predominate, as in the following formula:

℞. Acid. Nitrici dil., ʒ i.; Syrup. Zingib., ℥ ss.; Aquæ, ℥ vss.; misce. A tablespoonful every four hours.

To arrest the spread of the process over sound skin, nitrate of silver in very strong solution, or tincture of iodine have been considered efficient agents. A line of circumvallation is to be painted round the erysipelatous part, so as completely to enclose it. The nitrate of silver should either be employed in the solid stick; or as proposed by Higginbotham, in solution of eight scruples of the nitrate with twelve drops of nitric acid in a fluid ounce of water. Dr. Wood has practised with success and recommends the use of tincture of iodine. But in this country the boundary line of nitrate of silver has not been attended with success; and our best surgeons are now discontinuing the practice as a useless source of irritation (Erichsen, Campbell De Morgan). Sulphite of soda, in solution of ten grains to one ounce of water, is recommended by Dr. Addinell Hewson, of Philadelphia. He has never seen it fail to arrest the progress of the disease, if it has not advanced to the deeper parts below the skin. Lint soaked in the solution is to be applied to the affected part, and over a considerable distance beyond any visible appearance of redness. The lint is to be covered with oil-silk, to prevent evaporation. The application of sulphate of iron as a lotion or ointment tends to shorten the disease. In lotion, one drachm of the salt to a pint of water; in ointment, a scruple to an ounce of lard (Velpeau, Luke, De Morgan). It has the inconvenience, however, of soiling linen with which it comes in contact. None of these lotions should be applied cold, but tepid or warm. Collodion and iodized collodion are also worthy of commendation. Long and deep incisions into the inflamed textures are sometimes demanded. This is more especially the case if there be tension of fibrous tissue, such as the subcutaneous fasciæ; and erysipelas of the head is frequently greatly alleviated by repeated innumerable minute punctures, made

by the point of a lancet all over the parts of the face and scalp which are affected.

Erythema.—*Definition.*—Uniform redness simply, with puffiness of the skin, distributed in distinct patches of some size.

Treatment.—Rest, quinine, and iron, after aperients; carbonate of ammonia, after gentle purgation, in doses of 5 to 10 grains three times a day, are the most useful remedies. Oxide of zinc, in fine powder, dusted over the surface, will sometimes allay the local irritation.

Favus—*See Tinea Favosa.*

Febricula.—*Definition.*—A simple fever in which the expression of the febrile phenomena is of very short duration, lasting, as a rule, for not more than twenty-four, thirty-six, forty-eight, or seventy-two hours, attended with a frequent, full, and often firm pulse, white and coated tongue, pains in the loins and limbs, thirst, constipation, a scanty discharge of high-colored urine, hot and dry skin, sometimes an eruption of roseola or erythema about the loins or thighs, coming and disappearing with the fever (Morehead); severe headache, sometimes acute delirium, and flushed face. The subsidence of the fever is generally associated with copious perspirations, or herpetic eruptions.

Treatment of Febricula.—Such means as emetics, purgatives, tepid sponging, diaphoretics, and antiphlogistic regimen are to be employed. In plethoric individuals, where there is much headache and flushing of the face, leeches to the temples may be expedient, but such remedies are not often necessary (Morehead).

Fever and Ague.—*See Ague.*

Fever, Break Bone—*See Dengue.*

Fever, Cerebro-Spinal—*See Cerebro-Spinal Meningitis.*

Fever, Dandy—*See Dengue.*

Fever, Enteric—*See Enteric Fever.*

Fever, Intermittent—*See Ague.*

Fever, Malignant Purpuric—*See Cerebro-Spinal Meningitis.*

Fever, Puerperal—*See Puerperal Fever.*

Fever, Relapsing—*See Relapsing Fever.*

Fever, Remittent—*See Remittent Fever.*

Fever, Rheumatic—*See Rheumatism, Acute.*

Fever, Typhoid—*See Enteric Fever.*

Fever, Typhus—*See Typhus Fever.*

Fever, Yellow—*See Yellow Fever.*

Gall-Bladder, Inflammation of.—*Definition.*—Inflammation, generally catarrhal, but occasionally croupous or diphtheritic, of the mucous membrane of the biliary passages.

Treatment is similar to that of catarrh of the intestines, and especially in the use of nitro-muriatic acid internally and as baths.

Gall-Stones—*See Colic, Biliary.*

Gastritis.—*Definition.*—Forms of inflammation tending to exudations and destruction of parts, or condensations of tissue, especially about the pyloric opening.

Treatment.—Emetics may be required in cases where the stomach has been overloaded; and it is certain, from the gases and fluids causing prominence over the stomach, that it contains decomposing food. One scruple of ipecacuanha, with one grain of tartrate of antimony, is the safest and most efficient emetic. When injurious matters have passed into the bowels, causing flatulence and colicky pains, mild laxatives may be required, such as rhubarb; or, compound infusion or mixture of senna, or fluid magnesia, in small doses, may be given every hour or two hours, followed by five or ten grain doses of bicarbonate of soda. In chronic or passive congestion of the stomach, and in chronic gastritis, the advantage of nitrate of silver has been advocated by the late Drs. James Johnson and Symonds, and more recently by many other physicians. Argent. Nitrat., gr. ½, Ex. Hyoscyam., gr. ii. to gr. iv., made into a pill, may be continued every night, the quantity of the nitrate being gradually increased to two or three grains daily. It may not be continued, however, beyond six or eight weeks. Or Argent. nit. Crystal, gr. ss. to gr. i, Aq. distilat., f ʒ ss; may be taken at bedtime—the stomach being empty—and repeated every night, or every second, third, or fourth night, according to the severity of the gastric symptoms. I have found Seller's mixture of Bismuth of great advantage; and alkalies combined with morphia. In cases of acute gastritis, mercurial purgatives by calomel are of service. Three to five grains may be given to an adult; followed by a dose of castor-oil or the compound senna mixture of the

pharmacopœia. Where it is not desirable to act so searchingly on the small intestines, blue pill with compound colocynth or rhubarb pill in equal parts (*a a* gr. ii.), combined with one grain of ipecacuanha powder, is a mild and gentle laxative. Iced water to drink in small quantities, or small pieces of ice in the mouth, tends to allay thirst, and to appease pain; and the continuous use of hot water fomentations over the region of the stomach, as hot as the patient can bear them, is of great benefit (Brinton).

Glanders.—*Definition.*—A specific catarrhal inflammation of the nasal mucous membrane, produced by the contagion of matter from a glandered horse, and intercommunicated between men and horses. It is a febrile disease of a malignant type, characterized by vascular injection of the nasal mucous membrane, from which an aqueous, viscid, glutinous, or purulent discharge proceeds. Chancre-like sores are formed on the mucous surface of the mucous membrane extending to the frontal sinus and neighboring mucous surfaces. The lymphatic glands enlarge in the vicinity of these mucous membranes.

Treatment.—All the remedies hitherto tried in acute glanders have failed. The advent of typhoid symptoms has led to the administration of quinia, valerian, serpentaria, ammonia, and other stimulating medicines. In the more chronic forms of the disease the recovery of the patient has appeared to be owing to the excellence of his constitution; during the natural elimination of the poison, to good ventilation, and to generous diet, rather than to any effect produced either by general or local treatment.

Preventive Treatment.—The prophylactic treatment is the same as that of all other contagious diseases—namely, being careful to avoid all contact with the morbid poison, especially when a finger or other part of the hand is abraded; and if by accident the veterinary surgeon should inoculate himself, he ought instantly to destroy the part with potassa fusa. It has been recommended, after the disease has been set up, to extirpate the enlarged glands; but this practice is as unwarrantable as hopeless.

German Measles—*See Measles, German.*

Glossitis.—*Definition.*—Inflammation of the tongue.

Treatment.—Active cathartics are generally of great service,

and they are to be given as enemata. Blood must be taken directly from the tongue in such cases. Incisions along the superior surface of the inflamed organ, followed by the action of the vapor of hot water, may reduce the swelling and relieve congestion. The relief afforded by these measures is frequently almost instantaneous. Two or three applications of six leeches at a time to the inflamed parts may produce a speedy decrease of the tumor (Graves). If suffocation is imminent tracheotomy or laryngotomy must be performed. Erythematous inflammation of the tongue with generally yield to a combination of bismuth in glycerine, such as bismuthi subnitratis, gr. xx,; glycerini, ℥ i,; aquæ. ℥ vii. Of these make a lotion with which to wash the mouth and tongue.

Morbid sensibility of the tongue may be soothed by a weak solution of bromide of potassium, ʒ ss. ʒ i. to ℥ vi. of water, used as a mouth-wash (Symonds.)

Goitre.—*Definition.*—An enlargement of the thyroid gland, by some regarded as specific, and induced by the persistent use of water which has percolated through magnesian limestone rocks, or strata containing the soluble salts of lime in solution; or it is regarded as a circulatory disease, the two-fold blood and nerve supply of the thyroid gland being favorable to its enlargement under conditions of excessive and constant muscular exertion.

Treatment.—The indications are—(1.) To remove from the district where the disease prevails: (2.) improvement of the water used as drink; (3.) elimination of the goitrous poison, or change of constitution. As with the poison of mercury and of lead, so with goitre, iodide of potassium has a wonderful effect in subduing the swelling, and probably in eliminating the poison which produces goitre, whatever that may be. Iodine has thus acquired the reputation of being almost a specific against goitre (Coindet, Straub, Gairdner, Manson, Lugol). In robust subjects it has been advised that the administration of iodine should be preceded by general blood-letting, on the principle that the abstraction of blood favors absorption; but this should not be done unless the iodine does not seem to be producing any effect; and whatever may be the preparation of iodine employed, it must be persevered in for a length of time, and the dose gradually increased (Dunglison). The best form of administration is that in which the iodine is mixed with and dissolved by

iodide of potassium. It is then held in solution, and is sometimes known as Lugol's solution. It is made by dissolving one part of iodine (five grains) with two parts of iodide of potassium (ten grains), and adding water (to the extent of one pint). It contains one grain of iodine in four ounces of the solution. The treatment ought not to commence with a larger dose than one drachm three times a day. Small unirritating or alterative doses are the most efficient, and they may be gradually increased when necessary. The remedy may also be employed externally, in the form of a liniment or ointment—the unguentum iodum compositum, of which a small portion may be rubbed upon the swelling night and morning. In some parts of India the application of an ointment of the biniodide of mercury has been found efficacious. The ointment is prepared by adding finely-powdered biniodide of mercury to melted lard or mutton suet or vaseline (in the proportion of 15 grs. of biniodide of mercury to 1 ounce of lard. This ointment is then applied to the goitre about an hour after sunrise, and is rubbed in, by means of an ivory spatula, for about ten minutes—the patient sitting with his goitre held well up to the rays of the sun as long as he can bear the exposure. The ointment may produce a blistering effect, although no vesicles appear on the skin; and in the course of the day it should be gently rubbed in again, and the patient sent home, with orders not to touch it with his hands, but to allow the ointment to be gradually absorbed. A second application is sometimes necessary in very bad cases. In 1855 no less than 500 or 600 persons were sometimes treated in a single day; and it is estimated that altogether about 60,000 patients have been so treated; so that the cases in the district are now far less numerous than formerly, and the disorder is thus being extinguished (Mouat, in *Indian Annals* for April, 1857). When medical treatment fails, surgeons have attempted to give relief by one of three operations; but so long as the disease does not interfere with any of the important functions of the body, nor produce serious discomfort, surgical interference is not warrantable. These operations are,—(1.) The introduction of setons through the tissue of the diseased gland—an operation which has been successful. A thin double wire is to be passed through the gland, and left there for a week (Quadri, Tanner, James). (2.) Tying the thyroid arteries which supply the goitre with blood, and so starving the tumor, has been attended with varied success (Coates,

Brodie, Earle, Wickham). These means having failed (3.) the gland has been extirpated—an operation which few surgeons would now think of undertaking.

Regarding these surgical interferences for the radical cure of goitre, Sir Thomas Watson observes, that "there is not one of which the average results have been sufficiently prosperous to warrant its repetition, except in cases where life is put in jeopardy, or made miserable by the swelling; and where other methods, and particularly the treatment by iodine, have been tried and have failed" ("Principles and Practice of Physic," Vol, I., p. 795). He makes, however, an exception in favor of puncturing any cell or cyst containing fluid, which sometimes makes up a considerable portion of the tumor. Such cysts may be punctured without much risk, and with great relief to the patient.

Goitre, Exopthalmic.—*Definition.*—Enlargement with vascular turgescence of the thyroid gland, accompanied by protrusion of the eye-balls, anæmia, and palpitation.

Treatment.—The use of iron and tonics generally are indicated; and the use of digitalis may be indicated in connection with the cardiac symptoms. The indications for treatment are, to allay the irritability of the stomach by the use of ice; to give bland, unstimulating, nutritious food in small quantities and at short intervals; to produce sound and refreshing sleep by morphia, or any such stimulating soporific; to administer digitalis; to steady the weak heart and control its excitement. Iron may improve the state of the blood; but the hygienic conditions in which the patient lives are mainly to be rectified (Fletcher). Dr. J. Warburton Begbie recommended the use of belladonna in combination with iron ("Dublin Quarterly Journal of Medical Science," Nov., 1865, by Dr. W. Moore).

Gonorrhœal Rheumatism.—*Definition.*—An affection analogous to acute rheumatism, associated with gonorrhœa.

Treatment.—The condition of the digestive organs generally requires attention and correction. Anodyne fomentation generally affords relief to the pains of the joints. Dover's powder is to be given in the acute stage at intervals; and after the more acute symptoms have been subdued, the greatest benefit is obtained from blisters, repeated several times, when effusion within the capsule of the joint is a prominent symptom. An electuary of guaiacum, sulphur,

and cream of tartar (in equal proportion) in glycerine I have found of use. Vapor baths and Turkish baths are both of great service. The gonorrhœa must be cured as soon as possible by the usual remedies.

The preparations of iron, iodine, quinine, combined with ammonia, potass, or soda, in bitter vegetable infusions, according to the nature of the urinary symptoms, are the best tonic remedies, together with fresh air and good diet. Iodide of potassium ought to be used in the chronic form of the disease. Pressure over the joint by strips of adhesive plaster, aided with bandaging from the toes upwards, is often of great service in subduing the swelling which remains, after all other symptoms have subsided. Passive motion must afterwards be used.

Gout, Acute.—*Definition.*—A specific febrile disorder, characterized by non-suppurative inflammation, with considerable redness of certain joints,—chiefly of the hands and feet, and (especially in the first attack) of the great toe; attended by excess of uric acid in the blood, and probably also of phosphoric acid. The constitutional affection tends to culminate, at longer or shorter intervals, in a paroxysm, or "fit of the gout," when various joints, textures, or parts of the body are apt to become affected.

Treatment.—Seeing that the disease is clearly of constitutional origin, its treatment resolves itself into—(1.) The selection and administration of those remedies which shall tend to subdue, control, or eradicate the latent disposition, constitutional tendency, or gouty diathesis; (2.) The adoption of such means as may be safely used to modify the severity of or shorten the paroxysms. The paroxysm must be interfered with cautiously. It is the means which nature takes to rid the constitution of the *materies morbi*, and which it undoubtedly relieves for a time, if allowed to run its course. But the removal of the paroxysm, or its subsidence, does not necessarily remove the constitutional diathesis. That must be modified by promoting the transformation of the tissues of the body as much as possible in a healthy way. As to any local treatment during the fit, Sydenham writes, "If outward applications be required to ease the pain of the gout, I know of none, though I have tried abundance both on myself and others, and I have laid aside the use of topical remedies for many years." It is generally admitted that cold is dangerous, while warmth is

productive of little relief. In some instances the urate of soda is deposited in such quantity that the skin ulcerates, and the salt is discharged in considerable abundance in a fluid state. It might appear the right practice to apply a poultice and encourage the discharge, in order that, by its entire removal, the joint might be saved. This, however, is by some considered dangerous practice, for the discharge is so debilitating that patients are said to have sunk under this mode of treatment. It is much safer to wait till the chalkstone becomes concrete, and then operate, by the smallest possible incision, for its removal. With respect to the use of cold water, the practice is as old as Harvey, and subsequently it has been adopted and abandoned by many practitioners. Dr. Parry had at one time two patients who attempted to cut short the fit by plunging their feet in cold water. The relief was instant, but in a few hours both were dead of apoplexy. The fatal result of this remedy in Sir Francis Burdett's case is another instance in point. "A gentleman," writes Dr. Wood, "contrary to the advice of his physician, and anxious for speedy relief, ordered a bucket of water to be taken into his chamber at bedtime, with the view of employing it in this way. In the morning he was found dead in bed."

Antiphlogistics neither alleviate the pain of gouty inflammation nor shorten the attack; while their untimely use, especially general and local bleeding and active saline purges, favors the passage of acute into chronic gout. Rest is absolutely necessary. Warm anodyne lotions or fomentations may be used, and the part afterwards lightly covered or encased in flannel or fine wool, while the limb is at the same time kept elevated. The "bootikins" of Horace Walpole, so strongly recommended and given away by him to all his gouty friends, seem to have been merely a fine bandage of flannel, applied moist and firmly over the limb, and then a roller of oiled silk over it, giving moist warmth like a poultice. Writing to Horace Mann, he says,—"You must put them on at night, and tie them as tight as you can bear—the flannel next to your flesh, the oil silk over. In the morning, before you rise, you must dry your feet with a hot napkin, and put on a pair of warm stockings freshly aired. Over the bootikins at night draw a pair of thread stockings" ("Life and Letters, Vol. VII., p. 224). Dr. Wood uses a warm mixture of tincture of camphor with milk, applied by means of linen compresses, and frequently renewed. Tincture of

aconite may be similarly applied (f ʒ iss. to f ʒ iv. of milk). The hypodermic injection of a fourth to a third of a grain of muriate or bimeconate of morphia, in any convenient part of the body, often relieves the local pain. Blisters have been recommended, and are of most advantage in asthenic chronic cases, when the inflammation has a tendency to linger in the articulations, and to cause liquid effusion. In the early fits of sthenic gout they are unnecessary ; and are contraindicated in advanced gout, when the kidneys have become impaired, and also in cases of extreme gouty deposits (Garrod). As a general rule, however, the less that is done to the local affection the better. When the pain is very intense, relief may be given by the application of a solution of atropine, made by dissolving from two to three grains of the alkaloid in a weak mixture of spirits and water, and applying it to the inflamed joint by means of compresses of lint, preventing evaporation by a covering of oil silk (Garrod).

In the general treatment of gout bleeding is now generally restricted to two methods, namely—(1.) By leeches to the part where the inflammation rises so high, or is so chronic, as to threaten the patient with the permanent loss of the use of some joint ; and to cases of metastasis of the disease to the stomach or other internal organ, when leeches are absolutely necessary ; (2.) By general blood-letting. The following rules are laid down by Dr. Garrod as to the use of bleeding in gouty cases :—(1.) Never bleed with the idea of directly subduing gouty inflammation ; (2) Never bleed in advanced gout, or when the constitution is much weakened; (3.) If bleeding be required in order to relieve general or local plethora, abstract only as much as will effect that object, remembering that further depletion tends greatly to aggravate the disease and prolong its duration. Blood-letting produces a decided sedative action on the heart and other parts of the circulating system, and it has a most powerful influence upon the progress of gouty inflammation—an influence not merely limited to the removal of gout when it attacks the joints, but also of great efficacy in its marked and irregular forms, in the ophthalmia of gouty habits, in gouty bronchitis, and in headaches connected with the gouty diathesis (Sir H. Holland, Garrod).

With regard to purgatives, Sydenham, who was as great an enemy to purging as he was to bleeding, says,—"I am abundantly convinced, from much experience, that purging, either with mild or strong cathartics, whether used during

the fit or in its declension, or in a perfect intermission or healthy state, . . . endangers the life of a patient by hurrying on the disease to the viscera, which were quite safe before." The objection taken by Sydenham to purgatives was quite valid against those in use in his day, which were of the most drastic kind; but it may be laid down as a rule that neutral salts are not only safe but efficient in relieving gout, though perhaps not to be depended on alone for its cure. The theory on which they are prescribed is, that the alkaline base of the neutral salt is absorbed, and combines with the insoluble urates deposited in the joints, forming a soluble sub-urate, which can readily be absorbed; and, again, more alkali being sent to the kidney, that organ is enabled to remove more uric acid, in a soluble state, from the system than under ordinary circumstances. The salts most in use are the sulphates of magnesia or of soda, and especially the former; and half a drachm to a drachm should be given every eight, six, or four hours, according to the state of the bowels and the acuteness of the symptoms. It is also necessary to afford some relief to the patient from his excessive suffering. With that view an anodyne should be added, such as the tincture of hyoscyamus, syrup of poppies, or some preparation of opium. This method of treatment relieves the patient and shortens the paroxysm; but when the relief is complete, it should be abandoned, for sometimes a paroxysm of gout will return even under its use. Colchicum, or meadow-saffron, was long ago introduced as a specific in gout, of which the once popular "eau medecinale" was supposed to be a preparation. Colchium in some cases seems to be almost specific in its effects, and may be given as an extract or tincture, or as a wine, combined with some form or saline draught. Its mode of action is unknown. It very generally promotes secretion from the skin and kidneys; but it is useful even when it does not exercise any such physiological action. The quantity of uric acid and urea in the urine is said by some to be increased during its use (Chelius). Dr. Graves makes an opposite statement; and Dr. Garrod proves conclusively that colchicum does not increase the amount of uric acid. Dr. Laycock suggests that it may have a sedative effect on the vital actions going on in the tissues themselves, and so may arrest the formation of the gout poison. The wine of the root of colchicum is generally the form preferred, ten to fifteen or to thirty minims being given every four, six, or eight hours, and this remedy

ought to be continued for some time in reduced doses, after all symptoms of gout have disappeared (Budd). The bowels ought to have been freely moved before colchicum is given; and a full dose having been given at first, much smaller doses may be continued, as from ten to twenty minims two or three times a day, in Seltzer or Vichy water, or in other alkaline solutions, such as bicarbonate of potash much diluted, or combined with iodide of potassium, carefully watching its effects on the pulse, and never allowing sickness or depression to ensue. It may also be given with carbonate of lithia. Scudamore's mixture of colchicum, magnesia and sulphate of magnesia, is said to be an excellent purgative in gout when a purgative is required. Although Dr. Garrod has shown that purging is not necessary to the action of colchicum, yet, there are many who believe that the action of colchicum is promoted by its combination with laxative remedies. Abernethy was wont to prescribe,—

℞ Sodæ phosphatis; Sodæ sulphatis—aa ʒ iv.; Ammoniæ sesqui Carb., ʒ ss.; Acid benzoici, gr. xx.; Vin. sem. Colchici, ʒ iss; Infus. Calumbæ, ad ℥ viii., of which a sixth part is to be taken every four or six hours.

Dr. Wood is in the habit of using it in the following formula in a draught:—

℞ Magnesiæ, ʒ ss.; Magnes. Sulphat., ℥ ss.; Vin. Colchici. rad., m xx.; Aquæ Fluv. vel Aq. Acid Carbon., f ʒ iss.

Mercury in the form of "blue pill," or in the form of the "compound calomel pill" (Pil. Plummeri), followed by the draught just written, is useful where it is desired to act upon the intestinal secretions. But mercury in any form must not be given if the urine contains albumen. If mere constipation is to be got rid of, rhubarb pill, colocynth and scammony pill, or podophyllin, may be advantageously used. The iodide of potassium has been much recommended by Mr. Spencer Wells. Alkaline remedies are of much value in the treatment of the paroxysms of the joint affection, and may be prescribed in the form of the bicarbonate, or of the citrate or acetate of potash. Dr. Garrod prefers the bicarbonate, and Dr. Parkes has shown that it increases the elimination of uric acid and organic solids by the urine (Parkes on the Urine, p. 298). Much benefit is also derived from the continuous administration of salines in small doses, repeated two or three times a day, in a very dilute form, and always on an empty or nearly empty stomach, and some little while before food (Garrod). If acute gout should have

"retroceded," as it is called, and the stomach or intestinal canal be inflamed, leeches should be applied to the abdomen or epigastrium, followed by a poultice, while the neutral salts, with the tincture of hyoscyamus, should be given at least every four or six hours. It is very rare that more active medicines are necessary.

For further indications regarding the management of gout, see treatment of the next subject—namely, chronic gout.

Gout, Chronic.—*Definition.*—A persistent constitutional affection, characterized by stiffness and swelling of various joints, with deposits of urate of soda.

Treatment.—In chronic gout the treatment is the same as in acute gout; but, as next to hereditary predisposition, a disproportion between the amount of food and drink taken and the necessity for it, is a great cause of the disease, means ought to be taken to regulate the diet and promote healthy metamorphosis of tissue during intervals of freedom from gouty paroxysms. The habits of the patient ought to be regulated by written rules for him to abide by, if he would be free from gout. The form, the quantity, and the quality of the food ought to be precisely prescribed. Most gouty patients eat too much. Vegetables, with soups and meat, must be allowed only once a day—not oftener. Beer, wine, and alcoholic fluids generally are injurious, and must be forbidden to gouty patients, as they retard the metamorphosis of tissue. The same is true of tea and coffee. Water, pure water only, taken in quantities as large as possible, promotes the metamorphosis of tissue to a greater extent than any remedies we know of. The drinking of a certain extra quantity of water is essential for the maintenance of health in gouty patients. It ought to be taken in the early morning—to the extent of half a pint while dressing in the morning—and before any solid food is taken. Its use does not lessen appetite for food—as is the case with beer, wine, spirits, tea, and coffee. It promotes the flow of fluid by the kidneys, and increases the excretion of urea. Combined with muscular exercise, the use of pure water hastens, to the greatest possible extent, the transformation of tissue; and combined with the use of certain mineral waters and baths, a connecting link is established between the dietetic and medicinal treatment of gout. Whenever an excess of lithic acid or of lithates is seen in the urine, some alkaline water should be taken in the morning, instead of plain water; and enough should be taken to render the urine clear and free from de-

posit. But strong alkaline waters are not to be prescribed in large quantities, else too great depression and a tendency to impair the digestive power of the stomach will be the result. In moderation, the milder alkaline waters taken as a morning draught are of value. The mineral springs which exercise the most favorable influence on the gouty constitution are those of Aix in Savoy, Bath, and Buxton, Ems, Gastien, Homburg, Karlsbad, Kissengen, Marienbad, Neuenahr, Pfaffers, Schwalbach, Pyrmont, Spa, Toplitz, Wiesbaden, Wilbad, and Vichy. Dr. Garrod lays down the following general rules as a guide to the use of them :—(1.) Their use should be prohibited when there is much structural disease in any important organ, especially in the heart or kidneys ; and even when organic mischief is slight, the greatest caution in their use is necessary. (2.) They are to be avoided when an acute attack is either present or threatening. (3.) The particular mineral water must be selected according to the nature of the individual case ; for the robust, and those of full habit, the alkaline saline springs should be chosen ; when torpidity of the bowels predominates, the purgative waters may be used ; when the skin is inactive the sulphur springs should be used, and when much debility prevails, or an atonic state exists, then the more simple thermal springs may be prescribed.

These waters contain either alkaline carbonates, chlorides, or sulphates. Some are impregnated with sulphurated hydrogen, and others contain iron ; many, like Wiesbaden, Karlsbad, and some of the Vichy springs—Wildbad and Neuenahr—are of an elevated temperature.

The beneficial influence of these natural mineral waters is especially perceptible in the reduction of plethora by the alkaline springs, and in the regulation of the functions of the bowels and skin. The springs of Vichy are all rich in carbonate or bicarbonate of soda—about forty grains to the pint. Some have a temperature of 101° Fahr. In moderate doses they cause the urine to become alkaline or neutral ; and used as baths, they have a similar effect. They influence especially the functions of the liver and the skin, and are more adapted for the robust and persons of full habit of body ; but if the system is enfeebled by frequent attacks of gout, or if there is a tendency to the formation of chalk concretions, the waters of Vichy are not to be recommended. The waters of Wiesbaden contain a large amount of chloride of sodium, and are as high in temperature as 160° Fah

They are more highly stimulating and more generally debilitating than those of Vichy, and are of service in those cases where the circulation is slow and the secretions deficient. The springs of Neuenahr range in temperature from 90.5° to 104° Fahr., and contain nearly 50 per cent., by volume, of free carbonic acid, with a considerable quantity of soda salts, chiefly as carbonates. They stimulate the circulation, augment the excretions from the kidneys and the skin, increase the appetite, and diminish stomachal acidity. They are unsuitable for plethoric habits and where the liver is enlarged; but where the constitution is impaired or enfeebled, they are of great service. The waters of Wildbad, in the Black Forest, have also a high temperature—92° Fahr.—with much free carbonic acid, holding salts of soda, and magnesia, and iron in solution. They are alkaline, and their influence is similar to the springs of Neuenahr. The waters of Aix are slightly saline, and of a temperature as high as 135° Fahr., containing chloride, carbonate, and sulphide of sodium, with free sulphurated hydrogen. They stimulate the liver, kidneys, and skin, and are indicated where there may be sluggish action of these functions, and where the joints are stiff. The Karlsbad waters are rich in sulphate of soda, with carbonate of soda and common salt. Their temperature is about 167° Fahr. They are purgative, diuretic, and diaphoretic, and are beneficial where there is constipation, with congestion of the liver; and are unsuited for feeble patients. The waters of Baden-Baden contain common salt combined with iron, and are also rich in lithia. Toplitz, Gastien, Buxton, and Bath waters are also all somewhat elevated in temperature, and are peculiarly adapted for the treatment of gout in the infirm, feeble, and old patients. The chalybeate waters of Spa and Pyrmont are most suitable for anæmic patients and in the asthenic forms of chronic gout. The salts of lithia, so abundant in the waters of Baden-Baden, were originally proposed by Dr. Garrod as a remedy for gout. They have since been extensively used, and found generally beneficial. They abound also in the Karlsbad, Aix, Marienbad, and some of the Vichy waters. The salts of lithia are actively diuretic, powerful solvents of uric acid, and generally they tend to render the urine neutral. Taken for a length of time in a dilute form, they tend to prevent paroxysms of gout in chronic cases, and cause solution and absorption of chalky matter. They certainly lessen the deposit of water and uric acid in the urine; and are of service both in the

acute and chronic forms of gout. The dose is from five to ten grains of the carbonate of lithia, dissolved in aerated water, three or four times a day; of the citrate, eight, ten, or more grains may be given (Garrod, Flint, Clymer). Iodide of potassium is a remedy of very great value, especially in cases where "the pains are increased at night;" but the bromide of potassium is still more useful. It seems more highly anodyne and soothing. The iodide of potassium is useful in removing the recent thickening in the tissues round joints; and of gouty inflammation, when fluid is effused into the cavities of joints, and is slow of absorption. Guaiacum is especially useful in the asthenic gout of old subjects, and to younger patients also it is beneficial. A combination of quinine, iron, and arsenic is often of special service, in very minute doses, in the form of chlorides; and it is advatageous to unite small doses of colchicum with the quinine.

The patient generally receives some warning by which he may try and ward off the gouty seizure. When such warnings are recognized a combination of quinine, colchicum, and colocynth, taken twice or three times a day, is an excellent medicine. The pills of Becquerel are also recommended by Trousseau. They consist of:—

℞. Quiniæ Sulphatis, gr. xx.; Ext. Digitalis, gr. iii.; Ext. sem. Colchici, gr. x. Divide into ten pills, of which two or three may be taken daily for three or four days.

Laville's anti gout liquid and pills are French preparations, and are so popularly known and so much esteemed by many sufferers, who have used them with excellent effect, that they challenge attention, although they are open to the objection of being secret as to their composition, like chlorodyne, James' powder, and Warburg's drops. According to Dr. Tanner, "from an analysis, the liquid contains the active principle of colocynth, quinine and chinchonine, with unimportant salts of lime. It is used at any period of the attack; a teaspoonful being taken in sweetened water or tea, and repeated in six hours, if the pain continue and the bowels be not moved. Twenty-four hours are to elapse before the next dose, when half the quantity is to be taken two or three times daily, unless the bowels are irritable. The pills consist of physalin mixed up with silicate of soda and powdered chamædrys." One is taken just before a meal, for several weeks. In the chronic forms of the disorder, where there is no organic disease of the brain, heart, or lungs, wet-packing, and the Turkish bath, cautiously and occasionally used, but not

during a paroxysm, under the immediate supervision of the attending physician, would sometimes seem to be of service, in lessening stiffness of the joints and restoring or improving the action of the skin (Clymer.) Trousseau speaks well of the wet-packing. Hot salt-water baths are also beneficial. The inhalation of oxygen when followed by clear urine, has also given great relief, and in some cases cures have resulted.

In atonic gout some light tonic medicine may be given, as five to ten grains of the citrate of iron. A large number of chronic cases, however, though the general health is improved by this treatment, are often altogether unrelieved as to the local symptoms, and are often quite unable to assist themselves. In these instances the terebinthine remedies appear to be beneficial, as spruce beer, and Canadian balsam; or, one drachm of the oil of turpentine may be taken in an effervescing draught once or twice a day. Sydenham's method of treatment by manna may also be used. He recommends, from experience in his own case, large doses of manna in all cases of what he terms "bloody urine." If the chronic or atonic gout should become retrocedent, and the stomach and intestinal canal be the seat of the spasmodic form of the disease, Sydenham strongly recommends that laudanum should be given; but perhaps the following draught is more efficacious, namely—

℞. Aquæ Camphoræ, ʒ x.; Sp. Ætheris Sulphurici, ʒ i.; Sulphatis Magnesiæ, ʒ ss.

It will remove from the stomach any undigested matter which may remain as an irritating cause. This should be given every hour till the patient is relieved; and while it is being prepared, hot brandy and water should be freely administered, or the spiritus ammoniæ aromaticus, in doses of sixty minims, and hot cloths applied to the abdomen, as well as hot bottles to the feet.

As indiscriminate feeding appears to have a great influence in the production of gout, so we expect the regulation of diet should have great influence in its removal. During the fit the diet should consist of slops and light puddings, and afterwards white fish, till the paroxysm has terminated. Chronic gout is so distressing that many persons are inclined to diet themselves with great strictness during the interval. Sydenham says that a milk diet, or drinking milk as it comes from the cow, or boiled, without adding anything to it, except perhaps a piece of bread, once a day, had been much used for twenty years past in his time, and had done much service to

gouty patients. But on quitting it, and returning to the mildest and tenderest diet of other persons, gout has immediately revived; and he adds, that many cannot bear this regimen. An entirely water regimen he considers hurtful. The most digestible meats, such as mutton, well-kept beef and poultry, with the white kinds of fish, as cod-fish, sole, and whiting, may be eaten; but salmon, veal, and pork are to be avoided, as well as cheese, salads, highly seasoned dishes, and rich sauces, or other "elaborate preparations on the part of the cook." The use of alcoholic stimulants requires great caution. For those who inherit the gouty constitution, total abstinence should be made a rule absolute in youth; and for all others, unless some obvious necessity arises for their use and prescription by the physician, when the nature and quantity of the stimulant must be definitely stated, and measured out as any other medicine would be. If alcohol in any form is required, it may be taken as weak brandy, gin, or whisky and water, or pure dry sherry, like Amontilado or Manzanilla. Port, Burgundy, and sweet wines must be avoided; but wines of the Rhine vintages may be taken, if they do not contain a large percentage of alcohol. The wine should be of the highest quality, and fully matured and mellowed. Really good wines are generally used to advantage, and the vegetable extractions of the pure, mature, and mellowed wines are easy of digestion by the gouty stomach. The best spirit is whisky, which should also be very old, soft and mellow, and free from the smoky flavor. All of these spirits ought to be taken much diluted with water. The patient should go early to bed, keep the mind free from all disquietude, live with the greatest moderation, clothe himself warmly, and ride on horseback. When exercise cannot be taken, friction over the surface of the body is exceedingly useful. He should be rubbed down with a flesh-brush once or twice a day, just as a horse is groomed. Turkish baths taken regularly once a week, or as often as may be indicated by the medical attendant, are most beneficial. The custom of going to bed for an hour or two immediately after the bath —as in Germany—adds greatly to the good obtained from the bath; the body being covered and completely at rest, the nervous system is tranquillized, and the skin acts freely. But much harm may be done by excessive limitation of the supply of nourishment, as well as by the sudden and complete abstraction of spirituous fluids that had been used for years; as well as by other debilitating courses of treatment set about

too hastily and pursued too vigorously. If the patient is cachectic, debilitating treatment will make him worse. "There should be a due admixture of animal and vegetable food; it is an error to suppose that an animal diet tends more to the formation of uric acid than a vegetable one. The tortoise, feeding on a simple lettuce, excretes a large quantity of urate of ammonia, far more in proportion to the weight of the animal than is excreted by the dog exclusively nourished with meat. Vegetables, as potatoes, greens, and the like, may be partaken of with advantage; the soluble salts they contain are of value in keeping up the activity of the secreting organs. The same remarks hold good with regard to soft fruits when eaten in moderation, as strawberries, grapes, and oranges; also other fruits when stewed or baked, as apples and pears; but these latter, as likewise plums, and stone-fruit in general, should be avoided in a raw state. Extreme moderation should be exercised when saccharine fruits are eaten, as sugar is liable in many subjects to lead to the production of acidity. The same precaution is necessary in reference to the addition of sugar to other articles of diet." (Dr. Garrod). "Gouty folks should be very moderate in all their food—not, however, too abstemious, for such patients are seldom really vigorous, or able to dispense with a nutritious diet. Moderation should be observed, particularly in respect to the use of stimulants; and each patient must select for himself, or be advised to take what suits him best. There is a prevalent opinion that spirits are better than wines; but this is doubtful. The chief point is, that whatever stimulant is taken it should be used in the most strict moderation." (Sir James Paget).

One other point with regard to the treatment of the patient during the fit is, that if it be necessary to move him, either on account of his restlessness or other cause, this should be done with great care and tenderness by the attendants; for although the pain may be latent while the parts are quiet, yet the least shock often causes the most excruciating agony. The irritable state of mind of the patient during the paroxysm has been mentioned; and it is well known that slight moral causes will often produce a fit, while powerful emotions have sometimes cured one. It is quite essential, therefore, that the minds of gouty patients should be kept as tranquil as possible, both for their own sakes as well as for the comfort of those who minister to their needs.

Graves' Disease—*See Goitre, Exophthalmic.*

Green-Sickness—*See Chlorosis.*

Hæmatemesis.—*Definition.*—A discharge of blood from the stomach.

Treatment of the acute forms of hæmatemesis is similar in many respects to that of hæmoptysis. The great volume of the arteries of the stomach, and their origin almost immediately from the aorta by means of the cœliac artery, are reasons which have been alleged for this affection being but little influenced by general or local bleedings. The vast amount of blood sometimes lost by hæmatemesis renders it necessary to support the patient by acid wines much sooner and to a much greater extent than in hæmoptysis. In melæna the only chance for the patient is a liberal support by wine diet and medicines, and by opiates to quiet the stomach. In cases of hæmatemesis from cirrhosis, or other obstruction to the circulation through the liver, and in the vicarious hæmatemesis of women, leeches to the anal region or os uteri, are of service. The action of ice, by swallowing small pieces from time to time, is very beneficial, covering at the same time the epigastric region with ice-cold compresses, which require to be renewed frequently. Solutions of dilute or aromatic sulphuric acid, in doses of ten to twenty minims, or of alum, are of service. Alum may be given in doses of eight to twelve grains, combined with Battley's solution of opium, or with laudanum or sulphuric acid. In chronic hæmatemesis, acid. gallici, gr. x.; acid. sulph. dil., m x.; aq. distil., f ℥ i., has been recommended by Dr. Brinton. Solution of pernitrate of iron, in doses of thirty to forty minims, may be of use. Ergot may also be of service. Tannin is of service, as one of the best astringents in the form of a pill (O. Rees)—three to six grains twice or thrice a day. The patient must maintain absolute rest in bed, and must not rise to stool. Ipecacuanha in doses to produce nausea is of service in arresting hæmorrhage, and restoring heat to patients in the collapse of hæmatemesis (Osborne, Trenor, Graves), in doses of one to two grains every fifteen or thirty minutes till nausea is felt, when the remedy is to be discontinued, as vomiting is to be avoided. If stimulants are required, iced champagne may be given ; and when the vital powers are much depressed, ammon. hydrochlor., ʒ iss.; acid. hydrochlor., f ʒ ss.; decoct. hordei co., oz. i., may be taken every second or third hour (Copland), in doses of two or three teaspoonfuls.

Hæmatinuria, Paroxysmal.—*Definition.*—A condition in which the urine contains only the coloring matter of the blood with albumen, but no blood-corpuscles nor fibrine, coming on in sudden and irregular paroxysms.

Treatment.—Improvement has taken place under the use of saccharated carbonate of iron and quinine in full doses.

Hæmaturia Renalis.—*Definition.*—Hæmorrhages in which blood is mixed with the urine, whether it proceeds from the kidney, ureter, or bladder.

Treatment.—Tincture of the perchloride of iron is one of the most useful of remedies, whether in debilitated patients or in those suffering from Bright's disease, and whether the blood comes from the kidneys or bladder. It is best given in doses of m x. to xx., three or four times daily, in combination with glycerine; and if there be much cardiac difficulty, with arterial excitement, it may be combined with digitalis, as in the following prescription:—

℞. Tinct. ferri perchloridi, m xxx.; Tinct. digitalis, m xv.; Aq. menth. pip., f ℥ iss., repeated every four hours.

Gallic acid, in combination with sulphuric acid, may also be given; as also ipecacuanha, tannin, acetate of lead and alum, and ergotine, as already referred to under Hæmatemesis. Quinine and arsenic are remedies indicated in malarious intermittent cases. Idiopathic hæmorrhage often readily yields to bitartrate of potash, or to the mineral acids. Dr. Elliotson recommends, as also did John Hunter, the ol. terebinthinæ, in doses of m x., m xx., or m xxx., every two, or three, or four hours. Injections of cold water (or water in which twenty to forty grains of alum have been dissolved) into the bladder or up the rectum, and also a cold hip-bath, are useful applications. Dry-cupping over the loins is also indicated.

Hæmorrhage, Cerebral or Spinal—*See Apoplexy.*

Headache.

Treatment.—(1) *Of Sick-headache.*—Looking to the true cause of sick-headache as one which lies deep in the patient's idiosyncrasy, and as an affection which is developed by a hundred different sources of excitement, the advice to sufferers is to give as much tone as they can to their nerves by adopting all those methods which experience has shown to be good, and then avoid, as far as is practicable, all those causes which are known to excite an attack. Purgation has no good result. The only remedies which are of any avail are those

which act on the nervous system, such as hot tea and coffee ; or, after the stomach is quieter, and the more urgent symptoms have passed off, a little wine or ammonia. If the headache take more the form of hemicrania, then other remedies are occasionally useful, as the local application of the bisulphide of carbon, or galvanism, and internally the bromide of potassium. This is the only drug which Dr. Wilks has really seen to be serviceable. Whilst the nausea exists and the worst symptoms prevail, even this remedy is of no avail. As regards tea and coffee, which often relieve, it is possible that these and other stimulants, taken in excess, render the nervous system more susceptible to the attacks.

In the treatment of the paroxysm nothing is so efficacious as complete rest in the recumbent posture, with warmth, in a perfectly quiet and darkened room. A cup of very strong tea or coffee has also given relief. A comparatively new drug—guarana—has also been recommended. A full dose of brandy, or of ammonia, has also sometimes dispelled the headache ; so has continued sipping of a solution of carbonate of potash or of soda. Pressure upon the carotid artery of the affected side sometimes also relieves the pain, but for a time only. Evaporating lotions, belladonna, or aconite ointment may also ward off or subdue the headache ; but, as a rule, time is the most efficient element, with warmth to the feet and to the body, and the induction of sleep.

Adopting the theory of Dr. Latham, what are the indications for treatment with which it supplies us—(*a.*) During the stage of disturbed sensation ; (*b.*) during the stage of headache ; and, (*c*) during the intervals between the attacks ? The following are the results of his experience :—

(*a.*) *During the Stage of Disturbed Sensation.*—It is found that the longer this stage lasts, the greater will be the headache ; and therefore it is desirable to shorten it as much as possible. If the condition depend upon deficient supply of blood to a part, such means must be adopted as shall assist and increase the flow of blood to the part ; and this can be done in some measure by posture and stimulants. Directly the glimmering appears, the patient should lie down with the head as low as possible, and if the glimmering be on the right or left of the field of vision, he should lie on the opposite side. Let him take at once one ounce of brandy, either "neat" or in half a bottle of soda-water. Champagne would be preferable, being more diffusible ; but its administration would often involve a little delay. If alcoholic stimulants

be objected to, or if it be not advisable to recommend them, then a teaspoonful of sal-volatile in water may be prescribed instead. If the patient be chilly or his feet cold, the couch should be drawn before the fire, a hot bottle applied to the feet, and his body covered over with a warm blanket or eider down quilt. By these means the heart is enabled to drive the blood with greater force to the brain, and the duration of the vibratory movement is thereby materially lessened. After it has passed off, the patient should lie still for a time, so that the glimmering may not return. This injunction will only be necessary when the headache is slight; if it be severe, attended with much nausea or vomiting, the patient will be little disposed or able to leave the recumbent position. If, instead of the disturbance of vision preceding the headache, there be a feeling of depression or irritability (fidgets), the administration of such cerebro-spinal stimulants as henbane, valerian, assafœtida, spirit of chloroform, or ether, will often cut short the attack; ten or fifteen drops of the tincture of henbane, with the same quantity of spirit of chloroform, will soothe the nervous irritability in the slighter forms, and may be repeated in three or four hours, if necessary. If there be great mental depression, then valerian or assafœtida should be tried. Stillé says,—"Nothing is more astonishing in the operation of remedies than the promptness and certainty with which a dose of valerian or assafœtida dispels the gloomy visions of the hypochondriac, calms the hurry and agitation of nervous excitement, allays commencing spasms, and diffuses a soothing calm over the whole being of one who but an hour before was a prey to a thousand morbid sensations and thick-coming fancies of danger, wrong, or loss." Dr. Latham gives the preference to valerian, and prescribes from half a drachm to a drachm of the ammoniated tincture. Or it may be combined, as in the following formula, with bromide of soda; ammoniated tincture of valerian ℥ iv. with ʒ vi. bromide of sodium, in teaspoonful doses every hour. The assafœtida may be given in the form of the spiritus ammoniæ fœtidus of the Pharmacopœia, also in half drachm or drachm doses. As a rule, alcoholic stimulants are not advisable in this stage of the headache. A small quantity will cause flushing, heaviness, slight confusion of thought, &c., without relieving the depression; and though the severe headache may be averted, alcoholic stimulants do not answer so well as the remedies previously mentioned.

(*b.*) *During the Stage of Headache.*—If the headache be

slight and the patient soon able to sit up, there is little to be done; a cup of coffee or tea, cheerful conversation, a walk, drive, or ride, may often help to remove the pain. If, however, the headache and nausea be severe, then the administration of further remedies is called for. The patient should keep perfectly still and quiet, with the room darkened; for every sound or sight causes pain, and the slightest movement is sufficient to produce gastric uneasiness. Sometimes free evacuation of the contents of the stomach, especially if it contain undigested food, is followed by relief. Dr. Fothergill says,—"An emetic and some warm water soon wash off the offending matter, and remove these disorders," which may be very well where there is any offending matter to wash off, but it is not very often that this is the case; the nausea frequently continues long after the contents of the stomach have been discharged; an inverted action of the duodenum is set up; the bile appears in the fluids excreted; the patient believes that all his troubles are due to "its overflow;" "it's all liver," he says, and it is sometimes difficult to persuade him to the contrary. Generally, then, you should try to relieve and check the vomiting. Iced soda-water, with or without two or three drops of dilute hydrocyanic acid, or spirit of chloroform; cold tea; the effervescing citrate of potash, with hydrocyanic acid, may often afford marked relief. The headache may be lessened by applying cloths dipped in cold water, or evaporating lotions, to the head; if the extremities be cold and the headache severe, a warm stimulating foot-bath can be tried so soon as the nausea will allow the patient to sit up. If the attacks occur in the early part of the day, as soon as the pain has subsided it is generally better for the patient to sit up, or move about, or take exercise in the open air. During the attack the appetite is diminished, the idea even of food provoking disgust. Still, after the nausea has passed away and the headache has continued a few hours, a plate of hot soup or some easily digested food will often have a good effect in equalizing the cerebral circulation. A remedy which may very often be given with advantage if the headache be severe, is bromide of potassium, in doses of five, ten, or fifteen grains, to which thirty or forty minims of sal-volatile may, in some cases, be added with advantage; and if the nausea still continue, these may be given in combination with the effervescing citrate of potash. A saline purgative at the commencement of an attack is sometimes an effectual remedy; but, as a rule, the use of purga-

tives is objectionable. So far, these measures are only palliative.

(*c.*) *During the Intervals between the Attacks.*—First of all, the exciting cause is to be discovered and removed. Hours of study or work must be abridged; excessive bodily fatigue, loss of rest, everything, in fact, must be avoided which the sufferers know from individual experience will act as exciting causes. Where the attacks are associated with excessive mental work, they should be regarded as danger-signals, showing necessity for relaxation. The tone of the bodily and nervous systems must be improved by proper medicinal and hygienic means; and the chief remedies are steel, strychnine, phosphorus, and cod-liver oil. The success, however, following these remedies depends a great deal upon the way in which they are administered. For a day or two after the attack the stomach and bowels may possibly be disordered, and not in a fit state to tolerate such remedies. This must first be corrected. The simple vegetable bitters, such as gentian, with small doses of henbane and some aromatic, may be of service; and, if necessary, one or two grains of blue pill, with four or five of compoudd rhubarb pill, may be given at night. We may then try steel. In anæmic cases it may be advisable to stimulate the action of the heart, as by the following:—

℞. Ammoniæ muriatis, ℥ ss., Tinct. actææ racemosæ aquæ, a a ℥ iii. Two fluid drachms for a dose after meals in a wineglass of water.

If there be despondency with depression of spirits, phosphorus to the extent of $\frac{1}{100}$ to $\frac{1}{50}$ of a grain, combined with nux vomica or carbonate of iron, or both taken with each meal, will improve the tone of the patient. If the attacks have been frequent, or if there be any scrofulous tendency, the iodide of iron may be given in the folowing form:—

℞. Ferri et ammon. citrat., gr. v.; potassii iodidi, gr. ij.; aquæ, ℥ j; and, according to circumstances, fifteen to twenty minims of tincture of henbane or twenty or thirty minims of aromatic spirit of ammonia may be added.

If the stomach be at all irritable, this medicine may be given in the effervescing form, adding to each dose twenty grains of bicarbonate of potash, and directing it to be taken with a tablespoonful of lemon-juice, or a corresponding amount of citric acid: the dose to be taken twice a day, about eleven and four. The effervescing from may soon be left off, and then to each dose may be added five minims of

liquor of strychniæ (omitting the henbane and sal-volatile, and continuing the iodide of potassium according as it seems to be indicated or not). In other cases, the citrate of iron and ammonia with strychnine may be given at the beginning, sometimes combined with infusion of calumba. The iron is indicated by the greater or less anæmia of the patient; but the strychnine is a very important remedial agent in the disorder. In small doses it acts as a simple tonic, increasing the appetite and improving the digestion; it dilates the vessels, and thus increasing the supply of blood, it augments the activity of the spinal cord (Harley). It promotes the capillary circulation, and therefore its use is advisable for persons troubled with cold hands and feet (Anstie); and if it fulfil these conditions, it is clearly indicated in this disorder. Cod-liver oil also often acts very beneficially. "It has been found by experiment that great exertion and prolonged labor can be endured without fatigue when starchy and fatty foods are alone eaten; . . . and there is reason to think that cod-liver oil is more easily absorbed than other similar substances" (Ringer). "It improves the digestive process, increases the proportion of red corpuscles in the blood; and invigorates the whole nutritive function" (Wood); and it particularly sustains the energy of the brain during prolonged mental exertion. A gentleman in the foremost rank at the bar told Dr. Latham that whenever he was engaged in a jury-trial which was likely to tax his energies to a greater degree than usual, the thing which best sustained him was a good dose of cod-liver oil taken in the morning before going into court; and others engaged in mental work have confirmed this view. Besides its other properties cod-liver oil is a nutrient and tonic in its action on the cerebro-spinal nervous system. As a remedy for these nervous headaches, Dr. Latham prescribes it once a day, beginning with a small teaspoonful immediately after breakfast, and gradually increasing the quantity to a tablespoonful, but not beyond, unless in exceptional cases.

The action of the bowels must be regulated, but not by strong purgatives. Five grains of the Socotrine aloes pill, given at night, are generally sufficient. If the bowels be habitually constipated, then no remedy seems to answer so well as the aloes and iron pill. Five grains given twice a day, half an hour before meals, will act freely; and in a few days the dose will have to be diminished, for its effect is augmented instead of being lessened by continual adminis-

tration, especially when strychnine is given at the same time. The natural waters of Friedrichshall or Marienbad may, in many instances, be of service, given as laxatives.

In 1872 Dr. Samuel Wilks, Physician to Guy's Hospital, directed the attention of the profession to guarana as a remedy for sick-headache, and at the same time asked for the experience of those who already had some acquaintance with the drug. His own knowledge of it dated about 1870, when, after the appearance of a lecture of his upon sick-headache, he received a letter from Mr. Helmcken, of British Columbia, inclosing two powders, which he recommended with much confidenee as able to cure the complaint. "Upon my first headache after the receipt of Mr. Helmcken's letter, I took the powder, but with only doubtful effect. I therefore did no more than casually mention the medicine to my friends, but did not recommend it. A few weeks ago, after the appearance of a second communication of mine in the journal upon the same complaint, I received a letter from Dr. Wood, of Montreal, in which he also recommended guarana as a remedy for headache, and gave a history of his own personal sufferings and the relief which he obtained. He says,—'By taking one of these powders and remaining quiet when I have felt premonitory symptoms by a beginning of pain always in the right temple (headache on the other side, or in any other part of the head, I never mind), I have carried off the attack; and, with the first box, absolutely put it off for two months—something which had never occurred in my life before.' Upon so good an authority, I determined to try the remedy in a more systematic manner, and requested my neighbor, Mr. Hooper, the chemist, to procure me a packet of the powders. These I have recommended to several patients and friends; and the result is so encouraging, that I have hastened to suggest their trial to my professional brethren. One lady speaks most enthusiastically of their power, as she has now, on two separate occasions, had her headache arrested by their use. The drug has long been known, for mention is made of it in English and French pharmacologies, but appears never to have come into general use. It consists of the seeds of a tree growing in Brazil, called Paullinia sorbilis; and these, according to Johnstone, in his *Chemistry of Common Life*, are used as we do cocoa. The seeds are ground into powder, and contain an alkaloid which is said to be identical with that found in tea and coffee. The medicine is manu-

factured by Grimault & Co., No. 7 Rue de la Feuillade, Paris" (Wilks, *Brit. Med. Journ.*, April 20, 1872).

The general outcome of experience regarding the treatment of sick-headache seems to be that,—

(1.) Bromide of potassium, Indian hemp, Guarana or Paullinia powder, are remedies which have afforded relief. With reference to bromide of potassium, it is so valuable a medicine in many cases of sick headache that it can scarcely be superseded by a better remedy. The patient may have a splitting headache, fatigued and worried after a hard day's work. After fifteen or twenty grains of bromide of potassium, he presently goes off to sleep in his easy chair, and wakes in an hour well (Wilks). It is a medicine which Dr. Wilks always employs first, having seen such eminent advantages follow its use. "I have known (he writes) many patients declare, that the bromide was the first medicine they had taken in their lives which had the slightest effect in relieving their headache." As to Cannabis Indica, it seems best adapted to the interval between the attacks, in doses of a few drops of the tincture, when headaches are recurrent. It is best given in ten-minim doses, three times a day, continued for weeks or months (Wilks, John Murray). As to guarana powder, it seems most of all useful with females in arresting headache, so that it must be taken early when the headache is approaching; and if headache is not arrested, a second dose should be taken in fifteen, twenty, or thirty minutes after the first. If the medicine is of use, the headache will have gone in about an hour. The dose is 15 grains of the powder; and as it is somewhat astringent, it might be combined as an electuary with some laxative, such as the senna electuary (Hollis).

(2.) Certain classes of cases ought to be distinguished from each other. There are two principal types:—the congestive, met with in dark or plethoric people, in those with constipated bowels and suppressed secretions, and those addicted to alcoholic beverages, or leading a monotonous sedentary life; and that arising from exhaustion, whether from want of sleep or want of food, or great bodily or mental fatigue, strong emotions, &c.—this may be nervous, or asthenic, or anæmic in many cases. This latter form is very common in slight, delicate, and tuberculous females, and sometimes in the male sex. The treatment of these two forms must, of course, differ widely. An emetic or a purge in the one case will do what only rest, food, stimulants, and such medicines

as quinine, iron, opium, hyoscyamus and belladonna may afford in the other case (Dr. Bathurst Woodman). Rest and quiet, especially sleep, and abstinence from food, give relief and cure by a natural process of restoration. Generally, no relief is obtained till after a night of sound sleep—*i. e.*, "one night through the sheets"—awakening next morning free from pain, but generally more or less depressed. If depression continue, phosphorus with nux vomica in the form of sugar-coated or pearl-coated pills may be given to the extent of one-fiftieth of a grain of phosphorus and one-eighth of a grain of extract of nux vomica three times a day with food. Such despondency and depression are apt to occur in those who are over-worked mentally; or who are harassed by business; or who suffer great mental anxiety. If there be sleeplessness, the following pill may be of use:

℞ Camphoræ pulveris, gr. xx.; Ext. Cannabis Indica, gr. xii.; Ext. Hyoscyam., gr. xxiv., misce bene. Divide in pill xii. signa, one at night, to be repeated in two hours, if necessary, to procure sleep.

As to local applications, a large sinapism over the stomach, followed by a warm linseed meal poultice, has sometimes been of service. If pressure relieves, the head may be bound round with a handkerchief. When the head throbs and is hot instinct seems to suggest cold and pressure to the part; and one of the best external appliances on which we can rely to procure relief is the wet bandage tied tightly round the head. The method must be instinctive, for it is universal, and has been used from all time. Shakespeare is often quoted to illustrate the morbid states of the body as well as the passions of the mind, and he also testifies to this ancient practice. For example, in the scene between Huburt and Arthur in King John, the latter, when petitioning for the preservation of his eyes, says:

> "When your head did but ache
> I knit my handkerchief about your brows."

And in Othello we have not only the remedy for headache given, but the cause. The former was the handkerchief about which the chief interest of the play centred.

> "*Desdemona*, Why do you speak so faintly?
> Are you not well?
> *Othello*, I have a pain upon my forehead here.
> *Desdemona*, Faith, that's with watching: 'twill away again.
> Let me but bind it hard, within this hour
> It will be well."

Sick-headache is not to be cured by gastro-hepatic remedies. It is a purely nervous affection, due to hereditary predisposition, and excited by causes innumerable which act on a susceptible nervous system. There is, then, no cure in the proper sense of the term, for this would imply a change in the patient's nature ; and for the attacks themselves, when severe, the only relief which can be reckoned upon is to be found in a wet bandage round the head, profound quiet, and, if possible, sleep (Dr. Bathurst Woodman).

Considerable relief may be obtained from the use of cold applications, in the form of wet rags, ice in a bladder, or a little of the ether-spray ; but in not a few cases, after all, the best treatment during the attack is absolute rest and quiet, in a dark room, with warmth to feet and body, total abstinence, except perhaps from fluids (hot and alkaline) in small quantities at a time ; to go to bed at once, and refrain from the use of any remedies.

In a lecture on the therapeutics of headache, delivered at Bellevue Hospital Medical College, Dr. A. A. Smith suggests certain combinations of remedies which he has found of service in certain forms of headache : (1.) Malarial headache, where the pain is most frequently located in the sub-occipital or frontal regions, or on either side—hemicrania. If distinctly periodical, give ten or fifteen grains of quinine two or three hours before the expected attack. It may be necessary to push the quinine in divided doses until cinchonism is produced, and kept up for several days. Then gradually diminish the dose. If the pain still continues to recur, resort to arsenic and belladonna, five-drop doses each of Fowler's solution and belladonna tincture, after meals, increasing the Fowler's one drop each day, until œdema arsenicalis is produced. This will seldom fail to give relief.

(2.) In Headache dependent on Gout :

℞ Vini colchici seminum, ʒ iij. ; Lithii bromidi, ℥ ss. ; Syr. zingiberis, ℥ ss. ; Aq. cinnamonii, q. s. ad ℥ vj. ; M. Sig. ℥ ss. in a tumbler of Vichy water every four hours.

(3.) Rheumatic Headache is characterized usually by tenderness of the scalp, which is increased on pressure or motion. Use the mild Faradic current on the scalp, and internally the following :

℞ Potassii iodidi ; Ammoniæ muriatis, aa ʒ jss. ; Infusi humuli, ℥ vj. ; M. Sig. ℥ ss. four times a day in a wineglass of water.

In cases which have not yielded to the above treatment,

bromide of ammonium in twenty-grain doses every two hours may be effectual.

(4.) Uræmic headache is of great importance as a symptom of serious disease. The pain in the head may be the first evidence that there exists renal disease, and that we have to deal with uræmic headache. The judicious plan of treatment in such cases is to call into action one or all of the three great emunctories of the body, the kidneys, the intestines, and the skin. To make the kidneys act, apply dry cups over the region of them, and give internally the following :

℞ Potassæ acetatis, ʒ vj. ; Infusi digitalis, ℥ vj. ; M. Sig. ℥ ss. every third hour.

The infusion should be made from fresh English leaves. Give this until the kidneys act freely, if you can make them do it within twenty-four hours. If the kidneys do not act freely, and the headache be not relieved within twenty-four hours, give a saline cathartic. A treatment almost domestic, and often very effectual, is to put an ounce of cream of tartar in a quart of water, and have the patient drink this in eight or ten hours. It acts both as a diuretic and cathartic. Do not use hydragogue cathartics unless convulsions be threatened. Some prefer elimination by the skin. This can be done by diaphoretics and the hot, moist, or dry air bath. Diuretics, cathartics, and diaphoretics are only to be used where there is deficient quantity of urinary secretion. There are other causes of headache in Bright's disease which occur independently of the presence of an abnormal amount of urea in the blood, and which yet are dependent on the results of the kidney-disease. These causes may be anæmia, neuralgia, œdema of the brain itself, serous effusion into the ventricles ; and, in acute Bright's disease, cerebral congestion. Under the last condition, if the headache be very severe and convulsions threaten, blood may be taken if the patient's condition will admit of it, from twelve to twenty ounces, if necessary to relieve distressing symptoms. The best way to take it is by means of wet cups over the region of the kidneys. If the headache be dependent on serous effusion into the ventricles, or on cerebral œdema, improve the vitiated condition of the blood, and stimulate the heart and kidneys by acetate of potash and infusion of digitalis. There is apt to be general anasarca with this effusion and œdema.

(5.) The Headache of Acute Alcoholism, or inebriety.

The first indication is to remove the alcohol from the intestinal canal. For this, give of rhubarb and magnesia calcined each a half drachm, and then the following:

℞ Spiritus ammoniæ aromat., ʒ ij.; Tincturæ camph., ʒ jss.; Tincturæ hyoscyami, ʒ ijss.; Spiritus lavandulæ comp., q. s. ad ℥ ij.; M. Sig. ʒ j. every hour until the headache is relieved, and then give capsicum gr. ij, and quinine gr. iij. before each meal for several days. If there be sleeplessness give ℞ Sodii bromidi, ℥ ss.; Chloral. hydrat., ʒ ijss.; Syrupi aurantii cort., ℥ ss.; Aquæ, ℥ iijss. M. Sig. ℥ ss. at night; repeat in two hours if necessary to produce sleep.

(6.) *Dyspeptic Headache.*—If there be indigestible food in the stomach, and it have been there some time, give an emetic, as mustard and warm water, or sulphate of zinc, gr. xv. If there is evidence of indigestible food in the alimentary canal beyond the stomach, give gr. xx. of rhubarb and magnesia each, to remove it from the bowels. If the headache be frontal, and the pain be located immediately over the eyes, give dilute nitro-muriatic acid in ten-drop doses, well diluted after meals. If the pain be located about the roots of the hair, give an alkali before meals, as gr. xv. of bicarbonate of soda or magnesia. The dyspeptic headache oftentimes is not confined to these regions, but spreads over the entire head. In such cases combine an acid with an alkali, and add to these nux vomica, as in the following prescription:

℞. Sodæ bicarbonatis, ʒ ijss.; Acidi nitro-mur. diluti. ʒ ij.; Tinct. nucis vomicæ, ʒ jss.: Syr. aurant. cort., ʒ vj.; Aquæ, q. s. ad ℥ vj. M. Sig. ℥ ss. after meals in a wineglass of water.

If there be gastric pain, a mild counter-irritant, as a mustard plaster to the epigastrium will often relieve the pain in the head as well as the pain in the stomach. If flatulence be a troublesome symptom, give the following:

℞. Bismuthi subcarbonatis, ʒ ijss.; Tinct. nucis vomicæ, ʒ jss.; Tinct. cardamomi comp.; Spiritus lavandulæ comp. aa q. s. ad ʒ iv. M. Sig. ʒ ij. before meals in a wineglass of water.

If there be constipation, the following pill may be given, in the morning:

℞. Aloes pulv., ʒ ss.; Ext. nucis vomicæ, gr. v.; Ext. belladonnæ, gr. iv.; M. Div. in pilulas, xv.

In some forms of headache associated with stomach indigestion, small doses, often repeated, of tincture of nux

vomica may be effectual. A single drop every fifteen minutes and continue this two or three hours if necessary. In other cases, where the headache comes on soon after a meal, and seems to depend on delayed stomach digestion, large doses of pepsin are effectual. Give a half drachm of saccharated pepsin in a wineglass of sherry wine, three times a day, and let it be taken during meals.

(7.) *Congestive Headache*—Cerebral congestion as a cause of headache may be divided into two varieties, active and passive. These demand almost directly opposite plans of treatment. In the active variety the patient should be kept in a darkened room, perfectly quiet, and have cold and evaporating lotions applied to the head. A saline cathartic may be given; and the following prescription:

℞. Sodii bromidi, ʒ ijss.; Fl. ext. ergot., ʒ ijss.; Syr. zingib., ℥ ss.; Aq.. aurant. flor. q. s. ad ℥ iv. M. Sig. ℥ ss. every two hours.

If the skin be hot and dry, and the pulse full and rapid, give two drops of Fleming's tincture of aconite root every two hours, until the heart's action is sensibly diminished. Sometimes also a hot mustard foot-bath will give relief. The passive congestive variety demands a different mode of treatment. It is often found associated with cardiac disease, and most frequently where there is predominant dilatation. Hypertrophy gives rise to the active variety. Improve the condition of the blood by the use of iron, quinine, bitter tonics, alcoholic stimulants, good food, and stimulate the heart's action by the use of the following:

℞. Tinct. digitalis, ʒ iij., Spirit. amm. aromat., ʒ vj.; Spirit. lavandulæ comp.; Syr simp., a a q. s. ad ℥ iij. M. Sig. ʒ j. every four hours.

(8.) *Anæmic Headache.*—Cerebral anæmia produces a headache which is often mistaken for the passive cerebral congestive form. It is associated with general anæmia, nervous exhaustion, and may occur in heart disease, in consequence of enfeebled heart power, such as is met with in enlargement with dilatation, fatty degeneration, and myocarditis. Improve the general condition of the patient, and stimulate the heart's action as recommended in the passive cerebral congestive variety. Nitrite of amyl will relieve the immediate headache. Let the patient inhale three to five drops of it on a piece of cotton, placed within one nostril, while the other is held closed. When associated with nervous exhaustion, employ the following remedies:

℞. Strych. sulph., gr. ss.; Tinct. ferri chloridi, ʒ ij.; Glycerinæ, ℥ ss.; Infusi gentian., q. s. ad ℥ vj M. Sig. ℥ ss. after meals, in a wineglass of water.

Alcoholic stimulants are beneficial in headache dependent on cerebral anæmia. Champagne as a remedy, and not as a beverage, may be given to those who suffer from nervous exhaustion; or a tablespoonful of brandy, diluted with water, after each meal.

(9.) *Cerebral Tumors* give rise to headache, often severe. In all such cases, give iodide of potassium; for it cannot be safely said that in any given case the tumor does not depend on syphilis, and by administering the remedy, the patient gets the benefit of the doubt.

There is reason to believe, too, that patients with cerebral tumors, dependent on other and unknown causes, are benefited by the use of iodide of potassium. If there be much sleeplessness, use the bromide and chloral mixture Ergot has also been used. It is usually given in large doses, beginning with ʒ i. of the fluid extract three times a day, and gradually increasing the dose to half an ounce (*New York Medical Record* and *London Medical Record* Sept. 15, 1876.)

Heart, Fatty and other Degenerations of the.—*Definition.*—A change in the muscular substance of the heart, which results in elements of the muscular fibers being replaced by molecular fatty particles. The change tends to sudden death by rupture of the heart, or by syncope.

Treatment.—Iron in its various forms, quinine, and mineral acids, are the medicinal agents suggested by the nature of this disease. Freedom from anxiety, thorough repose of mind, entire avoidance of fatigue, gentle but regular exercise in the open air, careful attention to the state of the skin, with a generous and nutritious diet at regular intervals, in moderate and equable amount at each meal, are the main hygienic indications calculated to impart tone to the system, improve the condition of the blood, and induce a more healthy nutrition of the heart (Fuller). A salt-water sponging bath should be used daily. In cases where digestion is sufficient, cod-liver oil, cream, and milk may be given with great advantage (Tanner). The bowels should be so regulated as to render straining at stool unnecessary

Heart, Hypertrophy of.—*Definition*—An abnormal growth of the muscular substance of the heart, increasing its

volume by thickening of the cardiac walls; and generally with dilatation of its cavities.

Treatment.—As the bad symptoms in valvular affections arise from defective compensation, and as the compensation depends on the integrity of the heart-muscle, the maintenance of its nutrition is of prime importance. Palliative treatment is necessarily directed to aid the mechanism by which the ill-effects of valvular incompetency are to be met. In affections of the aortic valves, when the heart-muscle is well nourished, an almost perfect compensation may be maintained for years upon a nutritious (albuminous) diet, with fluids in small quantity—tonics, especially preparations of iron, being indicated. In the earlier stages a moderate amount of exercise is beneficial. In mitral affections, the compensation can never be so complete as to do away with the tendency to pulmonary complications. While the same nutritious diet and tonics are indicated to promote the nutrition of the cardiac muscle, exercise must be taken more cautiously; the object being to regulate and moderate the action of the heart, to control the tendency to local congestion, and to mitigate or remove the symptoms which result from the cardiac derangement.

Any blood-letting required ought to be effected by the application of a few leeches to the præcordial region, and very general relief will be obtained by hydragogue purgatives, aided by dry-cupping, mustard poultices, and turpentine fomentations. When, however, active congestion of the lungs exists, venesection, cupping, blisters, and sinapisms may be necessary. The distress from simple hypertrophy may, in the majority of cases, be greatly mitigated by such means as tend to tranquillize the action of the heart. No known drug possesses the power of controlling the growth of the heart. Saline and aloetic purgatives aid the calmative influence of the local abstraction of blood. Diuretics are useful independently of the existence of dropsy. Sedatives of the heart's action are indicated throughout, such as hydrocyanic acid, acetate of lead, digitalis, belladonna, and aconite, in the form of the alcoholic extract, given in doses of one-eighth of a grain (Walshe). It is chiefly useful in excessive hypertrophy, with hydrocyanic acid and caffeine. In repeating the doses, the effects must be watched, while they relieve the painful sensations and disquietude about the heart. If anæmia prevails, animal food should be permitted; and the more soluble and less astringent preparations of iron should also

be given. Fluids must be taken in small quantities. Like hypertrophy, dilatation of the heart is not removable by treatment. To improve the tone and strengthen the action of the heart, without exciting its irritability, are the objects to be aimed at in the management of cardiac hypertrophy with dilatation. For this purpose the beneficial influence of digitalis has been ably shown by Dr. J. M. Fothergill, in his "Hastings Prize Essay" for 1870, published in the *British Medical Journal*, commencing July 1, 1871; and also by Dr. Balthazar Foster in the *Medico-Chirurgical Review* for July, 1871. It is an efficient agent in helping to co-ordinate, by restoring the regularity of the heart's movements, when they have become tumultuous and irregular. The mechanism of compensation in each form of valve disease, therefore, requires to be considered. In hypertrophy digitalis is only of use when hypertrophy exceeds the limits of compensation. It slows the pulse and regulates the heart-muscle; but if the heart-muscle is unsound it will not be of service. As a general rule, the drug is most useful in mitral affections, and is contraindicated in aortic valve disease, except in cases in which the hypertrophy has exceeded the limits of compensation, and become the chief cause of the symptoms. It slows the pulse and increases its tension while strengthening and regulating the heart's action. The slowing of the pulse increases the period of ventricular diastole—that is to say, the period during which regurgitation takes place when the aortic valves are incompetent; consequently, digitalis does harm in this lesion by augmenting the regurgitation. In mitral obstruction it is most valuable when the rapid, irregular pulse tells of the varying quantities on which the ventricle contracts. Sometimes the interval between the ventricular contraction is so short, and the ventricular charge is so small, that the systolic wave does not reach the wrist. Under these circumstances the auricle must have more time to fill the ventricle. This is what digitalis effects; for by slowing the action of the heart, the period of time during which the blood from the distended auricle can flow into the ventricle is increased; and as the extra time allows more blood to pass through the narrowed mitral orifice before the final effort of the auricle is made, that effort is made on a smaller quantity of blood, and is consequently more effective; for the smaller the quantity of blood which the auricular muscle has to push before it, the greater will be the velocity given to the cur-

rent. The ventricle, through contracting less frequently, contracts more effectually. Instead of eighty or ninety irregular contractions per minute, we get some sixty steady equal beats. The pulse grows in force, fullness, and regularity; the arterial tension rises; the pulmonary congestion diminishes; the kindeys, before inactive, wake up to their work; and the advancing dropsy subsides (Foster, *Med.-Chir. Rev.*, July, 1871). Digitalis is also most useful in mitral regurgitation. In place of a large number of ineffective contractions, it concentrates the power of the ventricle on a smaller number of well-directed steady beats, each throwing a larger charge of blood into the arteries, and so diminishing, beat by beat, the over-distension of the right heart. It may be prescribed as an infusion or tincture, and continued as long as the quantity of urine increases or keeps up to the maximum which the digitalis produced. Such diuretic effect is the outward or visible sign of its beneficial action. The high-colored scanty urine, loaded with urates, is then replaced by a clear and copious stream, which tells of a steadily-beating heart and a firmer pulse (Foster). The tincture is the most convenient form for continuous administration (m v. to m x., three or four times a day). The freshly-made infusion acts most rapidly (℥ ss. to ℥ i., three or four times a day) along with potash or diuretics, and is conveniently added to vegetable infusions. Where it is desired to keep up the action of digitalis for a long time, the powder of the leaves is the most desirable form. It can then be given in pill, with the dried sulphate of iron, carminatives, laxatives, or both, twice a day. Half a grain to a grain of powdered digitalis, with an equal quantity of sulphate of iron, and a small portion (¼ of a grain) of cayenne pepper, in extract of gentian or aloes and myrrh pill, is a useful form which may be continued for months. This pill should be taken shortly after food. The addition of iron to digitalis is of great importance. The absorption of digitalis through the skin, by using poultices of the leaves, or flannel cloths soaked in the infusion and laid over the skin of the abdomen and thighs, is often most beneficial where it cannot be given by the mouth (Christison, Trosseau, Fothergill).

There are some circumstances, however, under which it is necessary to withhold the administration of digitalis in cardiac disease—namely (1.) The presence of atheroma (endocarditis) to any appreciable extent, and in aortic valve disease. (2.) Reith, Gull, and Brunton object to its use in

fatty heart. (3.) Intermittency of pulse is also a contraindie cation. If that symptom comes on during its use, the further administration of digitalis must be suspended, more especially if the pulse becomes thready, and the quantity of the urine diminished. On the other hand, where intermittency is shown to be the result of the heart's inability and distress, the quantity of digitalis must rather be increased (Fothergill). (4.) The occurrence of persistent vomiting or noises in the head under its use, suggests that it should be left off, for a time at least.

The action of the heart is also markedly influenced by veratrum viride. The dose of the tincture (from five to twenty minims) should be gradually increased from the smaller to the greater dose, till some obvious effects are produced. If the pulse is reduced, or nausea occurs, no increase of the dose should be made. If vomiting occur, it should be suspended ; and when resumed, the dose should be diminished. Veratria may be given in doses of from one-sixteenth of a grain to half a grain. When the pulse is sufficiently reduced, the doses should be diminished one half. Morphine or laudanum, with brandy, is an antidote for an overdose of veratria, which is an exceedingly powerful remedy as a cardiac sedative, and requires to be used with great caution, the patient being constantly watched. Its depressing effects on the circulation and nervous system are often very striking—a pulse of 75 or 80 being reduced in the course of a few hours to 35 or 40 (*Record of Pharmacy and Therapeutics*, No. V., p. 35, J. C. Braithwaite). Sleeplessness being one of the most distressing symptoms, opium in some form might be considered advantageous ; but "to give sedatives in such cases would be the refinement of cruelty. What keeps the patient awake is not a want of tendency to sleep, but a condition that makes sleep impossible. Relieve him of his orthopnœa, and he would be asleep in ten seconds, and so dead asleep that it would take a great deal to rouse him, like a half-asphyxiated child on whom tracheotomy had just been performed. His great struggle is the struggle between sleep and life ; with opium thrown into the scale of sleep, the struggle for life would only be so much the harder. Only in one way would opium give him ease ; the narcotic of opium, added to the narcotic of the carbonic acid already circulating in his veins, might accelerate by some hours, or even days, the final coma, and make him sooner sleep the sleep of death. But the euthanasia that is

purchased by anticipating the natural process of death comes very near to homicide, and is an alternative that few would adopt" (Hyde Salter, *Brit. Med. Journal*, Feb. 8, 1862). Morphia given hypodermically is the best form for relieving the dyspnœa and sleeplessness of some valvular affections, especially in mitral valve disease. The dose to commence with is one-eighth to one-sixth grain of the bimeconate of morphia (Dr. Clifford Allbut). But all sedatives require the utmost caution in their use.

The groundwork of medicinal remedies consists in the administration of general tonics in the form of bitters, mineral acids, and preparations of iron. Belladonna may be employed to tranquillize undue excitement with greater safety than any other sedative remedy. A plaster of belladonna and conium over the heart is of signal service when pain is usually felt near the apex, associated with palpitation. Due action of the bowels must be daily obtained, to accomplish which the aloetic medicines are the best, aided by the gentle action of an occasional mercurial aperient.

Careful regulation of the patient's mode of life is above all things necessary in diseases of the heart. Excitement of all kinds must be avoided; and the diet should be light, nutritious, and of moderate quantity; the clothing warm, and cold should be carefully avoided, especially by those affected with mitral disease.

When anasarca supervenes, the hydragogue cathartics are required to insure copious watery discharges from the bowels. Electuary of bitartrate of potash, or of gamboge, elaterium, podophyllin, and compound jalap powder should be given on alternate days. Stimulants also may be required, the most suitable being Holland gin, or whiskey.

When dropsy appears, diuretics yield most relief. Acetate, nitrate, iodide, and bitartrate of potass, nitric æther, compound tincture of iodide, the infusion and spirits of juniper, or gin, may all be employed in successive changes, variously combined. Small doses of blue pill and compound squill pill at bedtime, will facilitate their action generally; and so will cupping over the region of the kidneys, if symptoms of congestion of these organs prevail. Hydragogue cathartics aid the diuretics in subduing the dropsical effusions, such as elaterium, gamboge, bitartrate of potass, and compound jalap powder—the two last made into an electuary.

Heart, Malformations of.—*Definition.* — Deviations from the normal development of the heart, occurring in the earlier periods of gestation, and before the termination of fœtal life.

The *treatment* of malformations which are associated with cyanosis is mainly preventive of dyspnœa and palpitation, by the avoidance of fatigue and mental excitement, the maintenance of temperature, and especially by a nourishing diet and warm clothing.

Heart, Palpitation of.—*Definition.*—Palpitation and irregularity of the action of the heart, unconnected with organicmis chief, beyond, in some cases, a notable hypertrophy.

Treatment.—During the paroxysm the patient should lie flat on his back, bare his neck and chest, and allow the air to blow freely over him. The best remedies are, camphor mixture and æther, 3 i., with some slight opiate, as the syr up of poppies, 3 j., or tinct. hyoscyami, m xx. These should be repeated every quarter, or every half hour, or hour, according to the severity of the attack, till the heart's action is soothed. Cold brandy and water may be a substitute for, or adjuvant to, such medicines. If the attack occurs shortly after a meal, some purgative should be given to clear the stomach and bowels. Bicarbonate of potash (in 10 to 20 grain doses) is then also an excellent stimulant as well as antacid and sedative. Leeches to the os uteri in females, and to the perineum in males, sometimes relieve palpitation—proceeding in the one case from uterine disturbance, or from varicose veins, hypochondriasis, or hepatic congestion in either sex. Bromide of potassium and ammoniated tincture of valerian are also indicated. Digitalis is useful under the following conditions :—(*a.*) When there are palpitation and acute depression of the heart's action from shock (Paralysis of the sympathetic of Romberg), marked by a small feeble pulse, coldness of skin, cold breath, diminished temperature, and evidence of the organic system of nerves being acutely depressed. The heart's walls contract ineffectively. It does not respond to the stimulus of its contents. Combined with other stimulants, the administration of digitalis in a case of shock, following parturition, was followed by the most satisfactory results (Drs. Fothergill and Wilks, *Med. Times and Gazette*, Jan. 16, 1864). In Dr. Wilks' case, the patient seemed to be *in articulo mortis* —the face livid, no pulse at the wrist, and a mere fluttering

heard over the region of the heart. Brandy and ether had been given with no result; and dissolution being imminent, it was determined to administer digitalis, of which half-drachm doses of the tincture were given every hour. After four doses reaction took place, and after seven doses complete recovery occurred. The full veins and condition of the heart indicated distension and paralysis (Fothergill, *Brit. Med. Journal*, July 29, 1871.) (*b*.) When there is the irregular action of cardiac asthenia. (*c*.) When there is palpitation in dilated heart. It is useful to continue the medicines which have been mentioned, but at longer intervals, for some time. It is important also to counsel the patient strictly as to diet. It is often found that the palpitation returns after tea or after breakfast, or whenever hot tea or hot coffee has been drunk. In these cases it is desirable to avoid all hot slops, and to drink cold water at breakfast, and indeed at every meal. There are few tonics so beneficial as the natural tonic of cold water; and persons once accustomed to it feel a return to a modern breakfast a punishment rather than a gratification. Wine should not be taken, unless largely diluted with water, to be prescribed as required.

Hemiplegia.—*Definition.*—A form of paralysis affecting one lateral half of the body.

Treatment.—The object to be aimed at in the early treatment of hemiplegia is to keep down the frequency and force of the heart's action. For this purpose strict maintenance of the horizontal position is necessary; and when conciousness exists, let the mind be kept tranquil by every means. Remove any local impediment to the easy flow of blood, and let the head be slightly raised, in a room of equal temperature. Let the bowels be cleared out, so that no irritation from them may operate injuriously on the brain. Enemata ought to be employed; and castor oil or calomel, with compound jalap powder, may effect an efficient evacuation. Food should be nutritious and easy of digestion, and not too abundant.

The gradual removal of blood may be of service by relieving congestion of the right side of the heart, as shown by engorgement of the veins of the head and neck, and by lividity of surface (Bristowe, Watson). The circumstances under which its use is inadmissible are thus defined by Dr. Todd: If the patient be cold and collapsed; if the heart's action be feeble and intermittent; if there be an anæmic state; if the

patient be of advanced age; if their is evidence of extensive disease of the arterial system or of the heart; or, lastly, if it can be ascertained that already a large amount of hæmorrhage has taken place into the brain;—these, singly or conjointly, are reasons why bleeding ought *not* to be resorted to. If none of these objections exist, it is to be considered whether any of the indications noted require to be fulfilled, and whether they can be fulfilled by a local or general blood-letting. Modern investigations show that the brain is not generally in a hyperæmic state; so that it is chiefly to check or to prevent hæmorrhage that bleeding is to be resorted to in such cases. The sudden or rapid abstraction of a moderate quantity of blood, either from the arm or temple, or by skillful cupping, may check hæmorrhage, but the quantity taken should be small; and so, likewise, the quantity drawn ought to be moderate, if it is desired merely to lessen the frequency and force of the heart's action. "Generally, Dr. Todd came to the conclusion that, in cases of white softening, you are less likely to err by omitting than by adopting the practice." The rigidity of the muscles, which comes on very early and which indicates an inflammatory process going on round the clot, is to be combated by urinary and alvine evacuants, and by counter-irritation. It is not desirable to interfere in the later forms of muscular rigidity. With regard to the use of expedients for promoting the restoration of the paralyzed limbs to their normal condition, Dr. Todd's experience led him to write that nothing is of more decided benefit than a regulated system of exercise—active when the patient is capable of it, passive when he is not.

Any congestion of the spinal cord apt to supervene on cerebral hemiplegia must be diminished. The patient should not lie on his back, but, if possible, flat on his belly, the arms and legs being encased in flannel, and placed at a lower level than the spine. A hot douche may also be applied to the spine, the water falling from a height of at least four or five feet, through a tube three-quarters of an inch or one inch in diameter; and its temperature should be between 98° and 100° Fahr. The application should be continued two or three minutes, and continued daily for some time. Dry-cupping over various parts of the spine may also be of service, and so also may blisters, moxas, and cauteries (Brown-Séquard).

The most useful internal remedies are those which tend

to lessen congestion—namely, belladonna and ergot of rye. The dose of ergot in powder may be at first three grains twice a day, and gradually the dose may be increased till it reaches six grains twice a day. Belladonna may be applied to the spine in the form of a plaster four inches wide and six or seven inches long; and if no amelioration of the symptoms follows in a few weeks, the extract of belladonna may be given in doses of a quarter or a third of a grain twice daily: and if after six or eight weeks of this treatment no improvement is observed, iodide of potassium, in doses of five or six grains twice a day, may be given in addition to the belladonna (Dr. Brown-Séquard). If meningitis is believed to exist along with chronic myelitis, then the iodide of potassium should be given from the very commencement, along with belladonna, or with secale cornutum (Dr. Meryon). It has been given in doses of x. to xviii. grains daily for two months with success, in a case where loss of feeling over the whole of one side was complete for two years (Briquet). Spermatorrhœa may be relieved by pressure applied over the region of the prostate (Thomas and Meryon). Electricity must not be used, even for purposes of diagnosis, in a recent attack. It may only be used after a long period, to prevent atrophy of paralyzed limbs, when the application of galvanic currents and the use of the flesh-brush are recommended. When œdema of the limbs exists, a warm bath to the part every night is of service. The bowels must be kept open; and if anodynes are required, opium should be avoided, and hyoscyamus, conium, or Indian hemp should be used instead. Iodide of potassium ought to be taken before food in the morning, and an hour before dinner, so as to avoid its presumed decomposition by the gastric juice.

The nutrition of the spinal cord ought to be improved by the daily use of the cold douche; and sea-bathing may be of service. If symptoms of irritation do not exist, belladonna is not to be given; it is only in cases of congestion that it may be useful in diminishing paralysis; and the same rule applies to ergot of rye. Strychnine increases the amount of blood in the spinal cord. It may be employed in paralysis only when there is no sign of irritation, and ought to be avoided when there are signs of congestion or irritation (Brown-Séquard).

Hepatitis.—*Definition.*—Inflammation of the liver.

Treatment.—Tartar emetic, in one-eighth or one-fourth

grain doses every two or three hours, is of service in the acute parenchymatous inflammation, if given sufficiently early —*i.e.* within the first three days, when there is much vascular excitement, a full bounding unyielding pulse, with a dry hot skin and scanty urine. Tincture of aconite may be similarly used. General blood-letting is not to be adopted. Local depletion by leeches over the region of the liver, and also round the anus, so as more directly to unload the portal system, must be at once resorted to in acute cases; followed by fomentations and large linseed meal poultices, made as light and soft as possible, over the hepatic region. Mustard may be added to them, or laudanum may be sprinkled over their surface. Saline purgation and alkalies, with or without colchicum, are also to be freely administered. Some cases may be best treated by ipecacuanha, as in dysentery. In the early stage of acute primary hepatitis, should there be no diarrhœa, a mild purgative should be given at the commencement, to be followed by some mild diaphoretic, such as two drachms of the liquor ammoniæ acetatis, with five minims of the tincture of hyoscyamus, every half hour. After the skin has been thus made perspirable, the administration of chloride of ammonium, should be at once commenced in 20 grain doses twice or thrice daily, carefully noting its effects, after the manner advocated by Surgeon-Major Dr. William Stewart (*Madras Monthly Journal of Medical Science*, 1872, and *Indian Medical Gazette; Philadelphia Med. Times*, April 13, 1878). Dr. Stewart had previously (1870) published a pamphlet at Rangoon, in which he called the attention of the profession in India to the chloride of ammonium which has since obtained a great and well-deserved reputation in India and other tropical countries for the treatment of hepatic congestion; and it has been found of great use in this country as well as in India (Murchison, "Clin. Lectures on Diseases of the Liver," 2nd Edition, 1877, pp. 136 and 624). About fifteen minutes after the first dose a sensation of warmth is experienced in the epigastrium, which gradually pervades the abdomen and becomes diffused over the entire cutaneous surface. The patient may feel "light-headed," and at times drowsy, and the acute pain is either removed or limited to some fixed point. A free and equable perspiration takes place over the entire surface in about a quarter of an hour, and with each dose similar effects will occur. Other phenomena may occur which the patient and physician must be prepared for—namely, symptoms referable to the liver or relat-

ed parts, and variously described as a "shock," or succession of "shocks," in the hepatic region, "as something giving way," a "pricking sensation," a "pulling," "clawing," "working" or "gnawing" sensation. Fomentations or bran poultices are to be applied to the seat of pain. The diet is to be limited to arrow-root, sago, and barley flower made with milk, and barley water may be taken freely. Beef-tea may be added during convalescence. If liver enlargement continue on cessation of the physiological action of the drug, with feeling of stiffness, weight, or uneasiness, it may continue to be given in smaller doses (gr. v. to x.) thrice daily. The patient must be kept in bed, and in the recumbent position. Alcoholic stimulants, fermented drinks, and solid food must be absolutely forbidden, and the diet restricted to the farinaceous food already mentioned. Hot turpentine epithems are beneficial. Iodide of potassium, in combination with taraxacum, is of service in the chronic forms of hepatitis.

Herpes—*Definition.*—This lesion is expressed by red patches on the skin, of irregular form and variable size, upon each of which there arises a group, cluster, or crop of extremely minute vesicles, for the most part in a corymbiform arrangement.

Treatment.—Dry applications, such as enveloping the parts in cotton wool after sprinkling with oxide of zinc in fine powder, or with starch, I have always found better than wet applications. Tincture of aconite and tincture of opium have been applied to relieve the severe intercostal pain. The intolerable burning has been relieved by painting over the vesicated patches with collodion. It tends to prevent the rupture of the vesicles, and so to prevent ulceration by promoting healing of the parts under a scab when inflammation has subsided. An opiate application, such as Dr. Fuller recommends in sciatica, may be of use in some cases of shingles, namely:—

℞. Tinct. opii, Sp. Æther. Sulph. co.; glycerine, aa ʒ iii.; Ext. Belladonna, gr. xx; misce. A strip of flannel soaked in this should be applied along the course of the deep-seated pain, and covered with oil-silk, to prevent evaporation (Waring).

The state of the stomach and digestive organs, and diet generally, should be regulated. Malt liquors should be avoided; and, if pain is severe, opiate fomentations may be applied. Herpes preputialis requires no treatment beyond

careful ablution with tepid water, and the interposition of a piece of wet lint between the prepuce and the glans penis. If there is much pain, the lint should be moistened with a watery solution of opium.

Hooping-Cough.—*Definition.*—An infectious and (sometimes epidemic) specific disease, preceded and accompanied by fever of variable intensity; attended in the first instance by catarrh, and subsequently by paroxysmal fits of convulsive coughing, which occur in numerous, short, rapid, spasmodic movements of forcible expiration, suddenly followed by a prolonged and deep inspiration marked by a characteristic sound of a loud, sonorous kind, and variously named the "kink," "hoop," or "whoop." These paroxysms of expiratory and respiratory convulsive movements alternately recur several times, till the fit ends by a quantity of mucus being brought up from the lungs, or till the contents of the stomach are evacuated.

Treatment. On the invasion of the disease, beyond putting the patient on a low or very moderate diet, and attending to the daily action of the bowels, there is little occasion for medicine. It will run its course; and although no drug has any direct influence over this disease, one of two indications of treatment may be followed. The first is to prevent, if possible, cerebral irritation or convulsions, or any attack of inflammation, either of the lungs, the stomach, or of the membranes of the brain. The second indication, after the period of danger is past, is to prescribe such medicines as may diminish, mitigate, and control, as far as possible, the frequency of the paroxysms, to check those secretions which are in excess, and to excite those which are in defect. These objects are best obtained by mild sedatives, combined with gentle purgatives or laxatives. The choice of the sedative has been considered a matter of much importance. The Continental physicians have bestowed much praise on belladonna, others on hemlock, others on henbane, while some have contented themselves with opium. It must be admitted, however, that none of these narcotics possess any specific property in controlling this disease, so that the selection of the particular one must be left to the discretion of the practitioner. The mildest sedatives, such as hyoscyamus, or the syrup of poppies, are the safest and best. Should, however, belladonna be selected (as it seems to be the most efficient sedative), if the child be under four years of age, the dose ought not to exceed one-eighth or one-tenth of a

grain of the extract, with the same quantity of the powder of the leaves in a pill, the pill being dissolved in syrup at the time when it is to be administered (Trousseau). The dose should be given in the morning; and only once daily, commencing with one pill, and increasing to two or more. Or if hyoscyamus is chosen, half a grain to a grain every six or eight hours; while, if it be the syrup of poppies, this medicine should be given in such fractional doses of a drachm as are suited to the age. Powdered belladonna root has been recently recommended by Vollaut. The dose is one-fifth of a grain, given at first once, then twice, then four times a day, and so on until the paroxysms begin to subside, when it is to be given at much longer intervals. Thus, he says, the spasmodic period may be positively arrested in three or four days (*Syden. Society Year-Book*, 1862). Cochineal is an anodyne which sometimes affords relief. I have found it of marked benefit in cases where the child has been losing flesh from the constant vomiting following the paroxysms of cough. The tendency to vomit has always disappeared under its persevering use. It is usually prescribed in the form of a mixture, consisting of cochineal, 10 grains; subcarbonate of potash, 20 grains; sugar, ¼ oz.; water, 4 oz.; rub together and strain (Squire's *Companion to the Pharmacopœia*, p. 62) Of this mixture, a quarter of a teaspoonful four times a day is sufficient for a child one year old; half a teaspoonful for a child of two years old; and a teaspoonful for a child of four years. Boiled apples in milk should be given for food. An opiate, in the early stage of the disease, ought not to be administered alone, as it is apt to check the mucous secretion. Some purgative or laxative ought, as a general rule in all cases, to be combined with it; such as the confectio sennæ, rhubarb, castor-oil or manna. The neutral salts, however, sit easiest on the stomach, and (as the medicine must be continued) they are the most agreeable to the patient. If at the outset or afterwards the cough is very suffocative, an emetic is useful. Five to nine grains of sulphate of copper dissolved in three ounces of distilled water, and a dessert-spoonful every ten minutes, is the most efficient (Trousseau). Nitric acid, in the following formula, has been found of service:—

Acid. Nitrici diluti, f ʒ xii.; Tinct. Cardam. comp., f ʒ iii,; Syrup, f ℥ iiiss.; Aquæ, f ℥ i.; misce. Of this mixture, one or two small teaspoonfuls may be given every two hours (Gibb).

If convulsions should come on suddenly, and without headache or other symptom of inflammatory action, small doses of any opiate, and mustard poultices to the feet, may relieve the patient; and should convulsions still continue, an asafœtida injection may be administered. It often happens that convulsions are combined with a suppression of the vomiting, and of the usual glairy discharge. In these cases leeches, followed by a large linseed poultice, should be applied to the epigastrium. If the unfavorable symptoms should advance, and headache or other symptoms show an affection of the membranes of the brain, leeches should be applied to the temples and cold to the head. When the poison excites inflammation of the tissues or substance of the lungs, bleeding to a limited amount by leeches may be required; but the affection is not to be subdued by bleeding, as in simple inflammation. There is in severe hooping-cough, as in typhus, cholera, and many other affections, an unknown element which modifies and gives a specific character to all intercurrent inflammations. If the intestinal canal be affected, some purgative, combined with calomel, may be necessary to free the bowels from their contents. If the stools be white and muciform, and the patient not relieved, an enlarged state of the follicles may be suspected, and a linseed poultice should cover the abdomen for some hours, preceded by an enema of syrup of poppies and barley-water, which should be administered night and morning.

The disease having passed into the third stage, it is desirable to attempt to abridge the duration of the cough, which often extends to a most distressing length; and for this purpose tonics, antispasmodics, counter-irritants, and other remedies, either externally or internally, have been recommended. For medicine there is, perhaps, nothing better than a few drops of ipecacuanha wine combined with a minute proportion of laudanum or belladonna, to be administered every two, three, or four hours. The more stimulant antispasmodics, as asarcetida, castor, musk, oil of amber, cantharides, and camphor, are the remedies which have obtained the most suffrages in the cure of this stage of hooping-cough. The two first are in most esteem. Asafœtida should be given in emulsion, in the dose of one or two grains to a child two years old, repeated three or four times a day, or even as often as every two or three hours. Cullen preferred cinchona to asafœtida, and considered it "the most certain means of curing the disease." Many other remedies have been men-

tioned, as alum, hydrocyanic acid, oxide of zinc, arsenic, and many preparations of iron. All of these remedies have been found to a certain extent useful as tonics; but in estimating the results of remedies, we should be careful not to mistake temporary recovery for cure; and the fact of so very many remedies being highly spoken of suggests doubt as to the value of either.

When internal remedies have failed to make any impression, relief may be obtained by means of local treatment, or by derivatives, as by some liniment or embrocation, as the liniment of camphor or of ammonia, or with asafœtida, oil of amber, oil of turpentine, or the tincture of cantharides. The general opinion, however, is, that these do little good unless they contain some opiate, whose absorption they facilitate, and this may be attended with danger. The application of strong solution of nitrate of silver to the skin over the larynx has been much recommended. Foot baths and the warm bath have also been used, and often with much efficacy. A change of air is a resource of great value. A change from the bad air of a town to the purer air of the country is at all times a great benefit; it has also been found that a change from the country to the town is not less beneficial, and that the patient is benefitted even by the removal to a short distance from home.

Dietetic and General Treatment.—The patient should not be allowed animal food from the commencement almost to the termination of the disease in its acute form. It is desirable also that the temperature of his apartment should be regulated, and that he should not be exposed to any considerable or sudden change from heat to cold. In mild weather also, if no local symptom forbids, he should be permitted to take exercise in the open air. He should likewise, next his skin, wear flannel.

There are no known means of prevention, except an entire removal from every source of contagion.

Hydrocephalus, Acute—*see Meningitis, Tubercular.*

Hydrocephalus, Chronic. — *Definition.* — Effusion of fluid in the subarachnoid space, or generally distending the ventricles of the brain, and differing from cerebro-spinal fluid in containing more albumen (Hoppe); occurring chiefly among children, and when discovered later in life, generally dating back to childhood. The tissue of the brain in contact with the fluid, especially the commissural parts, is apt to

be broken down by œdema into a thin white pulp (hydrocephalic or white softening).

In hydrorachis the effusion of fluid is within the cavity of the spinal cord.

Treatment.—For chronic cases of hydrocephalus there can be no relief. In cases of hydrorachis, where a tumor is associated with spina bifida, iodine injections have been proposed (Velpeau, Debout, Brainard, Gross, Meryon). In operating, the puncture should be very small, by a small flat curved needle, directed subcutaneously into the sac. A drain of the fluid may then be allowed to escape through a canula, and the injection used must be very weak at first, the object being to excite a slow process of inflammation in the cyst. One-eighth of a grain of iodine, and a quarter of a grain of the iodide of potassium in solution, is the quantity prescribed for injection by Dr. Gross. Dr. Brainard uses a solution composed of five eighths of a grain of iodine and half a grain of iodide of potassium to one drachm of water. The puncture is to be closed with a twisted suture, and coated over with collodion. An anodyne should be administered and the child kept lying on its face. Mr. W. M. Coates, of Salisbury, has been also successful by a similar method of treatment. If the life of the child be saved, paraplegia is still apt to remain, and perhaps involuntary defecation and micturition (Meryon in *Brit. Med. Journal*, July 11, 1863, p. 28; also "Practical and Pathological Researches on the Various Forms of Paralysis," p. 25).

Hydropericardium.—*Definition.*—An increase of the normal liquor pericardii, containing little albumen, and analogus to the fluid of chronic hydrocephalus.

Treatment must be regarded by the attendant circumstances of the case, and in accordance with what has been already written on the subjects of pericarditis and dropsy. Paracentesis may be required.

Hydrophobia.—*Definition.*—A disease peculiar to animals of the canine or feline race, the specific poison of which being implanted by them in man, or in other animals, produces a similar malady. The saliva or secretion issuing from the mouth of the diseased or rabid animal contains and so conveys the poison which inoculates rabies, either through a wound or through a thin epidermis with abrasion. The period of incubation of the poison after inoculation varies from four to sixteen weeks, or even longer, before the malady becomes

developed. The disease is characterized by severe constriction about the throat, spasmodic action of the diaphragm, and distress at the epigastrium: all of which are aggravated or brought about by attempts to take fluid, or by the least breath or current of air on the surface of the body, which produces, in the first instance, an effect resembling that produced upon stepping into a cold bath. Saliva, tenacious and clammy, issues from the mouth. Paroxysms of phrensy, or of uncontrollable impulsive violence (rabidity), supervene. The duration of the disease varies from three to six or seven days, the greater number of cases terminating in death on the second and fourth days from the accession of symptoms. Death is generally sudden, and unexpected at the moment.

Treatment.—As there are but few authenticated cases of recovery from hydrophobia, so there are few instances of any mitigation of the symptoms by the use of medicine. All that remains is to mention the most leading experiments that have been made, with the hope that, as they have not been successful, they may not be wantonly repeated.

Dr. Hamilton gives twenty-one cases, and adds, "many hundreds more are on record," in which venesection has been unsuccessful, though frequent and copious. Opium has been given by Dr. Babington, to the enormous amount of 180 grains of solid opium in eleven hours, without the slightest narcotic effect, or the slightest mitigation of the symptoms. Nord has given a drachm of belladonna in twelve hours, without any benefit. Dr. Atterly gives to a child eight years old two drachms of calomel by the mouth, and rubbed in two ounces and a half of strong mercurial ointment in a few hours, with an equal want of success. A case, however, is related by Ligget, which is said to have been successfully treated by half-drachm doses of calomel, given to the extent of ptyalism, induced in three days, after four and a half drachms of calomel had been taken. The case really appears to be one of hydrophobia; and recovery is said to have been complete by the twelfth day (*Amer. Quar. Journal of Medical Science*, Jan., 1860). Iron, arsenic, nitrate of silver, camphor, musk, cantharides, turpentine, tobacco, acetate of lead, ammoniacal solutions of copper, hydrocyanic acid, galvanism, strychnine, nitrous oxide, chlorine, and guaiacum, have all been given in equally large doses, but have signally failed. In addition to these, Ploucquet in his "Literatura Medica Digesta," has enumerated nearly 150 other medicinal remedies. The failure of every remedy by the mouth, and the inefficacy of opium,

of morphine, and of laurel water, even when injected into the veins, so convinced Majendie that in hydrophobia the constitution was armed against the action of any medicinal substance, that on a patient laboring under this disease being brought to the Hotel Dieu, he determined to rely for all treatment on an injection of warm water into the veins. The patient, at the time of the operation, is represented as being absolutely insane, so as to require to be restrained. In this state, and with a pulse of 150, Majendie injected into his veins, in the course of two hours and a quarter, two pints of water, at the temperature of 100°. At the conclusion of this operation the pulse had fallen to 80, and the patient had recovered his senses, so that restraint was no longer necessary. The sequel, however, renders it doubtful whether this mitigation was desirable at the price of the intense suffering which followed. The poor man lived eight days afterwards, but the despondency and mental agitation quickly returned, and at the end of three days the poison (or the state of the blood induced by it and the warm water) appeared to set up a new series of actions on the synovial membranes of the wrists, elbows, and knees, attended with excessive pain, so that he was unable to bear the weight of the bed-clothes, and he died in great torture. The articulations thus affected were found, on *post-mortem* examination, to be greatly inflamed, and their cavities filled with pus. This case is remarkable as being the one in which life was prolonged for the greatest period of time recorded of this disease. The experiment has since been repeated by Gaspard and others; but the mitigation, if any, has been so slight and transient as to give no encouragement for repeating it; and, tried on the rabid dog by Youatt and Mayo, it proved eminently unsuccessful.

The property which some animal poisons have of controlling and of interrupting the actions of other morbid poisons on the constitution has caused even animal poisons to be tried in the cure of this disease. The rapid and powerfully acting poison of the viper led to the hope that the bite of that reptile might prove an antidote to the hydrophobic virus; but the experiment, tried in France, Germany and Italy, upon animals, has been entirely unsuccessful. M. Grindard conceived that the vaccine virus might influence hydrophobia, and he vaccinated a hydrophobic child in three places, and afterwards injected five charges of vaccine lymph into the veins; but the child died without any marked remission, and in the usual time. The following draught has been found

rather to promote euthanasia than to hold out any prospect of cure :—

℞ Spirit. Æther. Sulph., Tinct. Opii, aa mxx ; Spirit. Ammon. Aromat., ʒ ss. ; Chloroform, mxx ; Mist. Camph., ℥ iss. ; misce. To be given as often as may be considered safe (Cunningham, Carden).

On the same principle chlorodyne may too be given. The vapor bath is sometimes useful in moderating spasm. Having regard to the symptoms generally, and to the morbid appearances as being in many respects similar to tetanus, the remedies recommended in that disease might be successful in some cases of hydrophobia. Sialagogues have recently been advocated upon theoretical considerations, especially the extractum jaborandi fluidum, of which one drachm represents one drachm of the leaves as prepared by Messrs. Gall & Co. Curare has also been employed, but not with success, mainly at the suggestion of the late Dr. Francis Gibson of St. Mary's Hospital, London. For this purpose, Messrs. Gall & Co. have prepared an injectio curare (three minims being equal to one-third of a grain), which it is advised should be injected at intervals of a quarter of an hour or more, as soon as indications of the physiological action begin to diminish.

Preventive Treatment.—The probabilities are, that unless the operation of excision, or cauterization, be performed within a few minutes after the bite of the rabid animal, it is impossible to save the patient from the fatal disease, which, according to the susceptibility of his constitution, may threaten him at any moment. In all probability no prophylactic medicine exists in nature, and the administration of any potent substance by way of prevention is worse than useless ; for, without protecting the patient, it may injure his constitution. Mild remedies, if they tend to tranquilize his mind and appease his apprehensions, may be innocently employed.

The theory which maintains that a zymotic incubation first takes place in the wound, by which the poison is originally implanted, suggests the most rational prophylactic—namely, to destroy entirely by potass fusa the whole cicatrix, where practicable ; or, by some other surgical means, entirely to remove it at as early a period as possible, and previous to the occurrence of symptoms.

Hysteria.—*Definition*:—A complex disorder of all the cerebral functions, of a chronic kind, occurring mainly in females from the age of puberty upwards. It is probably

associated with some morbid state of the emotional or sensori-motor centres, and presents every variety of alteration, so that the phenomena of hysteria are protean, simulating or mimicking the phenomena of almost every other disease, while the most common and characteristic features of the affection are certain motorial changes of a convulsive nature, usually of paroxysmal occurrence.

Treatment.—The treatment may be divided into what should be done during the fit, and into what should be done afterwards.

When the patient falls into a fit of hysteria, the first thing to be done is to loosen everything tight about her person. The window should be opened, and the cold air allowed to blow over her. She should then be laid in the horizontal posture on a bed, or on the floor, as a means of rendering the circulation through the brain more equal, and to enable us the more readily to control the convulsive movements of her body. This being done, many modes of further proceeding may be followed. Some recommend, in plethoric cases, that the patient should be bled—a remedy certainly in many instances manifestly improper, and in all of doubtful efficacy. When the jaw is locked, an enema, consisting of the yolk of an egg beat up with two drachms of asafœtida, with half a pint of water added, may be administered; or, still better, an enema of turpentine, in which half an ounce of turpentine is similarly mixed with the yolk of an egg, and half a pint of water added. These remedies, in some instances, instantly remove the affection, but in other cases not for some hours. Another remedy is to fill the mouth with salt. The remedy, however, which supersedes all others, and is unquestionably the best, is a good drenching with cold water. 'I believe there is more virtue in cold water than in any other single remedy" (Watson). If the patient lie on the bed, the head should be drawn over its side, and a large quantity of water poured on it from a considerable height out of a pail, jug, or other large vessel, and directly over the mouth and nose of the patient, so as to stop her breathing, and compel her to open her mouth. This practice is generally introduced into hospitals; and until it was adopted it was not unusual to see three or four patients in hysteria in the same ward, and at the same time. Under this practice, however, an hysterical case is rare, the fit seldom occurs twice in the some person, and the affection never becomes epidemic.

After the paroxysm is over, if the patient complains of continued headache, a few leeches to the temples may be necessary, especially if the urine be small in quantity and high colored; but in all other cases leeches, blistering, or cupping should be avoided, as tending rather to aggravate than to control the disease. The next object is to regulate the bowels by such remedies as may be necessary, and at the same time to support and tranquillize the patient by stimulants, such as ether or asafœtida, combined with hyoscyamus in the form of tincture, the syrup of poppies, or small doses of morphia.

Niemeyer recommends the chloride of sodium and gold as a restorative nerve tonic. He prescribes in the form of a pill, as follows:

℞. Auri. chlorat. natronat, gr. v.; Gum. tragac. Co., ʒ i.; Sacc. Alb., q. s.; misce. Divide into forty pills, of which one is to be taken an hour after dinner, and another an hour after supper. After a time, two are to be taken as a dose at one time, and increased gradually till eight pills a day are taken; a cold shower bath twice daily.

The state of the uterine functions must always be inquired into. If leucorrhœa be present, or the menstruation be profuse, the mineral acids, or the bitartrate of potass., will be found most efficacious, by restoring a more healthy state of the deranged organs.

The urine is often suppressed for a time after an attack of hysteria; but unless the bladder be sensibly, and perhaps painfully distended, no attempt should made to draw the urine off. Something more should be hazarded to avoid this necessity, for the catheter once passed, that operation will require to be performed morning and night, perhaps for several months. It is important that pity, attention, and sympathy be withheld as much as possible from hysterical patients. The moral and bodily condition deterioates under such influences. Firmness is essential for successful treatment.

Hystero-Epilepsy—*See Epilepsy.*

Icterus—*See Jaundice.*

Ichthyosis.—*Definition.*—A lesion which involves the whole tissue of the skin and is characterized by the growth of thick, dry, imbricated scales of a dirty grey color, resting upon a perfectly uninflamed surface, and never accompanied by pain, heat, or itching.

Treatment.—Remedial measures are only palliative, consisting mainly of mucilaginous and glycerine lotions, with vapor baths to mollify the roughness. Potash solutions, or other preparations of potash, are contra-indicated as local applications.

Ileus—*See Intestines, Obstruction of.*

Infantile Convulsions—*See Convulsions, Infantile.*

Influenza—*Definition.*—A specific catarrhal inflammation of the mucous membrane of the air passages, and generally also of the digestive organs, with severe constitutional disturbance. The disease is invariable in its essential characteristics, frequently prevailing as an epidemic, attended with lassitude and prostration to an extreme degree, with special and early implication of the naso-laryngo-bronchial mucous membrane. Frequent chills occur, and great sensibility to cold exists over the surface of the skin; the eyes become injected, and tend to fill with tears, the nostrils discharging an acrid fluid; attended with fixed and intense pain in the head, mostly frontal over the eyes, sometimes also attended with giddiness. The nights are sleepless, with delirium or lethargy; cough prevails with yellow expectoration, most troublesome at night, and tending greatly to increase the headache. Fever attends the disorder, sometimes slight and sometimes severe, and of a type varying in different epidemics and localities. The duration of the fever is definite, of from four to eight days (Parkes). The sense of taste is greatly disordered, and there is great anxiety and depression over the region of the heart.

Treatment.—As a general rule, the great majority of cases in epidemics of influenza have scarcely required any medical treatment. In 1782 it was observed that "many, indeed, were so slightly indisposed as to require little or no medicine; nothing more was wanted to their cure than to abstain for two or three days from animal food and fermented liquors, and to use some soft, diluted, tepid drink. A gentle purgative at the beginning of the disease was useful in moderating the fever; and nature seemed to point out the repetition of it afterwards when there was pain in the stomach and bowels, and a tendency to diarrhœa." The same was observed in 1762. Nothing, likewise, was observed so successful in mitigating the cough as to open the bowels, and afterwards giving a gentle opiate at night. In the year 1837 it was also remarked that, as long as the symptoms were lim-

ited to cough, hoarseness, headache, or other pains moderate in degree, the patients all recovered by putting them on a low diet, by attending to their bowels, and confining them for a few days to the house. It was quickly found that the disease ran a course scarcely influenced by medicine. A small number, however, required medical aid, either from the severity of bronchitis, the occurrence of pneumonia, of angina, or of severe dyspnœa, of the disordered state of the bowels, or more frequently from the debility induced by the disorder. Blood-letting, even by leeches, is always hurtful. It does not relieve the fever, and increases the nervous depression. But when pleurisy, bronchitis, or pneumonia may supervene, leeches to the chest, or cupping, may relieve symptoms. A mild purgative dose of calomel (one to three grains) should be given once at first, followed by a saline purgative. Dark-colored motions are brought away, the spirits improve, and the fever abates. But mercury must not be given beyond an occasional purge. Emetics are also to be avoided. They increase depression, and are apt to produce irritability of the stomach difficult to subdue. Hot fomentations, bran, mustard, or linseed meal poultices to the chest, or flannel or cotton wool envelopes, are often of great comfort and usefulness. During convalescence sulphate of zinc is a useful tonic when the expectoration is thin and spumous; and alkalies are more useful when it is viscid and glairy (Peacock). Nitrate of potash, highly diluted and mixed with lemon juice and sugar, is a most useful drink. From 60 to 120 grains in twenty-four hours may be taken. Stimulants are early called for on account of the intense prostration. Opium must be used with great caution in the severe pulmonary complications. Its use ought to be put off till the later stages, otherwise it may increase the tightness of the chest and the dyspnœa. It must not be given till all danger of lung congestion is past. When the fever and other immediately alarming symptoms of the influenza had ceased, there frequently remained a teasing cough, and the convalescents in general complained of languor, want of appetite, and that their sleep was broken and unrefreshing. For removing these complaints, change of air and riding on horseback were most effectual. To some they were absolutely necessary; and, in addition to these, mild tonics, or the natural chalybeate waters drank at the Spas, were of singular service. In slight cases it was sufficient to limit the patient to white fish and puddings; and in the more severe forms, to

slops and light puddings. The night air was universally prejudicial. It does not appear that any precautionary treatment was of service in preventing the spread of the disease among the attendants on the sick.

Insanity.—*Definition.*—Disorders of the mind consequent on brain lesions, or attendant on affections in which the brain is secondarily or remotely implicated. Feelings, Emotions, Intelligence, or Will of the patients, conjointly or separately, are exalted, perverted, or impaired.

The *Treatment* of insanity resolves itself into the medical and the moral management of the case. Medicine indirectly acts upon the brain as it does upon other organs, so as favorably to influence the course of the disease. It regulates the different actions and secretions of the viscera of the body, and thus improves the general health, so that the happiest results are obtained by the early and judicious use of medicinal agents. No uniform method of treatment can be taught. The condition is essentially one of asthenia, feebleness, anæmia, or exhaustion. Local bleeding may be adopted in some cases with reference to a distant viscus. Leeches to the vulva and thighs are beneficial in some cases of mania, monomania, or melancholia, in adults, when such disorders of intellect are concurrent with the menstrual period; and to the sphincter ani in those cases obviously connected with suppressed hæmorrhoids or hepatic congestion. In some instances leeches may be applied with benefit to the Schneiderian membrane, particularly in those cases occurring in early life, and in persons of plethoric constitution and of sanguine temperament. Illusions of hearing or of vision, which had embittered the patient's life, have been removed by leeching behind the ears or over the superciliary ridges. The utility, in acute mania, of prolonged hot baths was much insisted upon by the late Dr. Winslow. The patients remain from eight to fifteen hours in them, at 82° to 86° Fahr., whilst a current of water at 60° is continually poured over the head. Various details of what is now known as hydropathic treatment have recently been introduced, with great advantage, into English asylums, such as the Russian or vapor bath, the wet sheet, wet pack, and the like. Packing in the wet sheet, warm baths with cold to the head, will often procure sleep more certainly than medicine of the sedative or hypnotic class.

Sedatives, or agents which modify directly the condition of the cerebral tissue, and which procure sleep or rest to the brain, constitute very valuable remedies. In recent acute

cases they are generally admissible, and are only contra-indicated if constipation keeps up the excitement and sleeplessness or if local cerebral irritation exists; or if the general health and secretions are disordered. In the various chronic forms of melancholia they are most useful, and in suicidal insanity. The meconate and hydrochlorate of morphia should be uninterruptedly and perseveringly given, in gradually increasing doses, until the nervous system is completely under their influence. The preparation Dr. Millar has found most useful and the least productive of constitutional disturbance, is a solution of opium in water, acidulated with citric acid (containing about one-sixth of crude opium) administered every four or six hours, in doses of from 10 to 20 minims, (equal to 10 grains of crude opium daily), and continued until the patient feels he can sleep without it. So also will chlorodyne and chloro-morphine be of use in some cases, as well as chloral, bromide of potassium, and hyoscyamus. Indian hemp is an extremely useful sedative, not hitherto appreciated sufficiently for many reasons. (See an excellent paper on its uses by Professor Russell Reynolds, in Beale's Archives, Vol. II., p. 154.) It relieves pain, is soporific, anodyne, antispasmodic; and while conducing to sleep, promotes at the same time diaphoresis and diuresis, without producing headache, vertigo, constipation, or impairing the appetite. The dose varies from one-sixth to one-half grain for a child, and from one-third to one grain and a half for an adult. In cases of mental or emotional disturbance it will be found extremely useful, especially where there is deranged cerebral circulation, with pain and delirium; in cases of incipient insanity after fever or sunstroke; and in cases of senile ramollissement. Recently digitalis, conium, belladonna, have been extensively employed as calmatives. Endermic medication in insanity offers numerous advantages; and hypodermic injections, especially of calmatives and soporifics, have also recently been employed. Dr. Reissner's experience leads him to recommend morphia, codeia, and narceia, the former being much the most useful, and the others only to be used in special cases when morphia fails. Narceia he recommends in those cases where the injection of the morphia produces unpleasant symptoms of an uncomfortable kind—not to say of a poisonous tendency. Narceia he considers a special remedy in such cases. Preparations of opium introduced into the system by the hypodermic method, are more speedily mani-

fested by the results than when administered by any other mode. The acetate of morphia is the best form with a minimum of acetic acid, in hot distilled water, in the proportion of five grains of acetate of morphia to one fluid drachm of water or of glycerine. One minim of this represents $\frac{1}{12}$ of a grain—a safe and useful minimum dose. Two minims (equal to $\frac{1}{6}$ of a grain), is the best commencing dose for relief of severe pain, and as a hynoptic in states of nervous irritability, whether connected with disorder of the intellect or other diseases. Three minims or $\frac{1}{4}$ of a grain, is an unsafe dose to commence with; dangerous and even fatal results have resulted from such a dose. It should not be given till smaller doses have been tried. Used endermically, the salts of opium are reckoned to be three times as powerful as when swallowed (Waring). Hydrate of chloral is of use in subduing the delirium of mania and sometimes in obtaining sleep, combined or not with bromide of potassium.

Purgatives may be regularly required. When the bowels are constipated the form is best determined by the state of the tongue, and sometimes by the idiosyncrasies or proclivities of the patient in regard to medicine taking. Supposing the tongue to be white and coated, the sulphate of magnesia, or other neutral salt, combined with tincture of hyoscyamus, in the proportion of ʒ j. of the former to mxv. to mxxx. of the latter, in camphor mixture, is a formula to be recommended; so also is calomel (five grains) with compound jalap powder (ʒ i.), and a little powdered ginger; and also watery extract of aloes nightly. If, on the contrary, the tongue be clean, the cathartic should be given with some slight bitter, as the infusion of orange peel or of gentian. In some cases the bowels are not only exceedingly obstinate, but the patient may be greatly averse to all medicines. In such cases one or two drops of croton oil placed on the tongue or introduced in food produces free evacuations. Mild purgative treatment formed the basis of cure in the school of Pinel and of Esquirol, usually combined, in cases of violence, with the application of cold to the head, and of warmth to the lower parts of the body; such as placing the patient in the warm bath, and giving him the cold douche—a remedy since more particularly insisted upon. The further treatment consists in restoring any other functions that may be in defect or in excess, as the functions of the uterus in the female, and of the liver or heart in both sexes, by the usual remedies applicable for these purposes.

When there is anæmia, vegetable tonics, combined with the preparations of iron, are of great service. At the same time the patient ought to be supplied with an abundance of nutritious and easily digested food. It quiets the noisy, and lessens the dirty, mischievous, and destructive propensities of others. Where there is an absolute refusal of solid food, as in acute mania, it is essential that the liquids (which the patient for the most part readily takes) should contain as much nutritive material as possible. Strong soup and broth, beef-tea mixed with milk and with arrow-root, must be given often. The best form of food is that in which eggs and milk largely enter. Two or three eggs beaten up, and mixed with a half a pint of warm milk, warm ale, or warm porter, may be given with a sedative every four to six, or eight hours, and continued daily till excitement abates, or the ability to take solid food returns. Such stimulant food is well borne, and absolutely necessary in cases of acute mania. In melancholia, three to twelve ounces of wine may be necessary in the twenty-four hours; and there is also a tolerance of opium. Ten minim doses may be given three times a day. If impulsive tendencies are manifest with despondency, bromide of potassium should be given in thirty to forty grain doses, with an iron mixture. If the tendency is to atonic lethargy, large doses of quinine, or small doses of strychnia, are to be given with the iron. Easton's syrup is valuable. In neuroses of the stomach and gastralgia, arsenic and bismuth are both of much service in small doses. Muriate of ammonia is of special use in those cases in which the depression is intense and paroxysmal in character.

The moral management of disorders of the intellect is by many supposed to constitute the more efficient mode of cure; and it must be admitted to be a most important adjunct. The first important rule is to remove the patient at once from his family. In slight cases this step is necessary in order that he may be induced to exercise such command over himself as he possesses, and to remove him from influences which may have been aggravating his morbid state; such as finding himself a prisoner, instead of being master in his own house. In severe cases it is necessary, in order to prevent his doing mischief either to himself or others. In melancholia no form of treatment is so efficacious. The great object is to break up the monopoly of grief and fear which has obtained possession of the mind; and if a new interest can be awakened or a fresh hope insinuated, this object is in a great part ob-

tained. At the same time solitary brooding and idleness must not be permitted; and at least cheerful companionship must be secured. It is important also to seek out and to treat visceral or constitutional diseases and relieve them—*e. g.*, gout, syphilis, uterine disorders, climacteric conditions, and the like. The main feature in the moral management of the insane in this country is the abolition and absence of mechanical coercion or restraint. The beneficial action of this system, generally known as "the non-restraint system," is now thoroughly recognized in England and Scotland, where it has been gradually established in every asylum since 1847–48. But there are certain exceptional phases of insanity, in which some mechanical restraint is the most humane mode of treatment—the only mode, indeed, of avoiding certain catastrophes of too common occurrence. In certain conditions of excitement it is proper to place the patients at once in a darkened room, remote from the noise and the means of injury to himself or others, so that as few objects as possible may irritate him, just as a patient with his eyes affected is kept in a darkened room. The effect of such seclusion is generally of a soothing character; and in not a few cases of periodic mania it is eagerly sought for by the patients themselves. When a case of melancholia is of severe type from the first, muriate of ammonia and tincture of opium are the most valuable egents. There is a tolerance of opium in simple melancholia. So long as depression lasts it is taken with benefit to every function. When depression terminates it may be abandoned at once without inconvenience. As convalescence advances the patient should be induced to undertake some manual labor, or some office in the asylum or household, which, by amusing his mind, will invigorate his body, and greatly tend to restore the healthy working of his brain. There are no more powerful moral medicines than "occupation," "recreation," and "education." Occupation should be such that no time is left for idleness; or for sitting brooding over morbid fancies. The curative results of well-chosen means of recreation cannot be over-estimated. When the circumstances of the patient admit of it, traveling, which embraces change of air and change of scene as well as exercise, is oftea highly salutary in incipient cases; and much has of late been done by the judicious introduction of music and other amusements into asylums. Change of scene acts often like a tonic to the depressed and jaded powers; but where there is great restless-

ness and feverish perturbation, traveling and change of scene should not be resorted to (Dr. J. Crichton Browne). Concerts, balls, conversaziones, evening entertainments, pic-nics, excursions, *fetes champetres*, athletic games, pedestrian excursions, public amusements in towns, and carriage drives, are all legitimate and well-approved means of maintaining a constant and varied succession of recreation adapted for all classes of the insane. When reason is restored and the affections again fix themselves on their natural objects, and when the emotions are under control, the patient may be allowed to see his friends, and have his attention directed to the affairs and interests of his family; but it should be remembered that the mind remains weak and enfeebled for some time after apparent recovery; and, consequently, the patient's restoration to society should be gradual.

An hospital for the insane, or a lunatic asylum, is the most fit and proper place for a "person of unsound mind." But every such asylum ought to be governed by one superintendent, who should be a medical man—an officer of health to the community over which he presides. He ought to have the means of controlling all sanitary arrangements in whole and in detail—of avoiding over-crowding—of preventing and destroying effluvia—and of examining the quality of the food, the water, and the drugs furnished to the establishment. Chemical and pathological appliances ought therefore to be at his disposal for his use. The number of patients who may be thus under the supervision of one medical head in an asylum ought not to exceed 200 (Esquirol, American Commissioners in Lunacy). Premature removal from asylum treatment, in opposition to medical advice, is greatly to be deprecated; and its baneful results are frequently to be seen, especially in the sad endings of cases of suicidal melancholia. In such cases an acknowledgment should be required of the recipient of the patient, or his friends, that he is removed notwithstanding the assurance given by the medical superintendent that the patient is not recovered, and is unfit for removal (Dr. Lindsay, Thirty-second report, p. 14). Such removals not unfrequently induce a change of type from acute and curable to chronic and incurable mental disease.

Insolation—*See Sunstroke.*

Intermittent Fever—*See Ague.*

Intestines, Hemorrhage From—*Definition.*—Loss of blood from some portion of the mucous membrane of the alimentary canal below the stomach. It may have its seat in the small intestines, or in the large, or in both, but probably never flows from the whole length of the canal.

Treatment.—Ergot is a useful remedy. Dr. Macgregor, of Glasgow, records a case of persistent periodical hæmorrhage from the bowels which yielded to ergot when all other remedies had failed (*Glas. Med. Journal*, June, 1867). In hæmorrhage from the bowels in enteric fever, the tincture of the perchloride of iron is often useful, and if associated with much arterial action, it may be combined with digitalis, as in the following formula :

℞ Tinct. Ferri Perchlorid., m xxx. ; Tinct. Digitalis, m xv. ; Aq. Menth. Pip., ℥ iss., repeated every four hours (Waring).

In the event of failure, the iron tincture may be used as an enema, combined with opium, in the following formula

℞ Liq. Ferri Perchloridi, m xv. ; Morphiæ Hydrochlor., gr. ½ ; Aq. Tepid, ℥ iv. ; Misce (Dr. John Harley).

In cases where there is a tendency to syncope from intestinal hemorrhage, oil of turpentine (m x. to m xv.) every half hour or hour has proved an effectual remedy (Dr. John Harley). The treatment of hæmorrhoids consists—(1.) In fomenting them with hot water, with the free use of Castile soap, when they are in the acute stage of inflammation, and of a dark red appearance, throbbing, and painfully burning, as if a red-hot coal had been applied to them. In this condition dusting with calomel has been found to give relief (Biddle, Atkinson, *Practitioner*, Vol. XXIII ; 1879, p. 104). (2) If the pains continue excessive, a few leeches may be applied to the margin of the anus ; and, at the same time, the bitartrate of potash, combined with sulphur and guaiacum, in the proportion of one part sulphur and of guaiacum to two of cream of tartar, a teaspoonful being taken three or four times a day, which ought to keep the bowels gently relaxed. Numerous cases have now been published which confirm the value of glycerine, in doses of a dessert-spoonful twice a day, in the treatment of internal and external hæmorrhoids (Dr. David Young, *Practitioner*, l. c., p. 251). The protruded bowel ought also to be carefully washed with a sponge and cold water after defecation, and the use of paper entirely discarded. To relieve the weight and tension after use of soap and fomentation, compound gall ointment and bella-

donna extract, in equal parts, should be freely applied every three or four hours till the pain subsides. In the chronic stage, the common pitch ointment is the best application (F. P. Atkinson, l. c.) Stringent rules ought to be laid down as to diet, which should be light, and the patient limited to French and Rhenish wines. Ablution with cold water should be practiced morning and evening; and some persons are sufficiently sthenic even to bear with advantage an injection of cold water after each evacuation of the bowel. In prolapsus ani and hæmorrhoids, Professor Cleland recommends the use of liquor bismuthi as an enema. A dessert-spoonful of the liquor is to be mixed with half a wine-glassful of fluid starch, and, after getting into bed and returning the bowel to its place, to introduce this enema and retain it.

Intestines, Inflammation of—*See Enteritis.*

Intestines, Obstruction of—*Definition.*—An obstacle or impediment which obstructs the passage of contents through the bowel.

Treatment.—In all cases of intussception, whether occurring in children or adults, the administration of purgative medicines tends to aggravate the lesion and the symptoms. Accordingly the rule of practice is absolute—namely, "to withhold all purgative medicines from the commencement in cases of intussusception." The bowel being incarcerated, the stimulus of purgation proceeding from above downwards is quite unable to undo the incarceration of an intussusception. A purgative acts injuriously as a stimulus which cannot be obeyed; and its obvious tendency is to increase the peristaltic action of the bowels, and therefore to increase still more the invagination. That such is the case will be readily understood by a physiological consideration of the phenomena of intussuception: for although it is not always easy to account for the first beginning of invagination, yet physiology enables us to understand how an invagination once begun, the lesion tends to increase—(1.) From the peristaltic action of the bowel, gently stimulated and increased by irritation of every kind, so long as tonic irritability continues. (2.) From the spasmodic action of the part of the gut above the invagination, preventing spontaneous return. (3.) From the invagination being thus completed, it continues permanent, tenesmus occurs, and the violent and repeated

contractions of the abdominal muscles tend still more to maintain and increase the lesion. The constant motion and pressure of parts one upon another in some cases is so great that the end of the invagination has been known to penetrate through the walls of the inclosing bowel, so as to appear in the cavity of the peritoneum. The chief indications are—(1.) To prevent distension, by reducing, in every possible way, the quantity of food and drink, restricting the latter to small but frequent sips (preferably through a long straw or tube) of cool iced liquids. Food is to be given, as strong beef-tea, soup, or milk, with equal frequency and caution. Small doses of alcohol (as brandy with water, or soda-water) is to be alternated. But if any repugnance exists to food or drink, or if vomiting is excited by these articles, the amount given must be reduced. Water, milk, and gruel are to be given freely in often-repeated enemata. (2.) To assuage pain and to mitigate excessive peristalsis suggest the same kind of remedy—namely, opium, which is to be given continuously and alone in the solid form, preferably as an extract. The limit of the dose is indicated by the comparative arrest of pain, the approach of narcotism, and decided contraction of the pupil. Belladonna is only of use as a remedy to diminish the straining peristalsis. It may be given combined with opium, as two parts of extract of opium to one, two-thirds, or even one-half part of extract of belladonna in a pill. Enemata are useful as a mechanical aid to removing obstruction. They may gradually distend the bowel at the site of obstruction, so as to effect such a change in its position and arrangement as may release the impacted portion. The administration of enemata is only safe and efficient if undertaken by a person of competent skill. The quantity of fluid must be injected little by little, and must be retained as long as possible; and the patient must resolve to tolerate some pain in reaching the climax of distension at which only enemata are calculated to relieve obstruction. In cases where the intussusception is in the large intestine, inflation of the bowel with air, as originally suggested by Hippocrates two thousand years ago, in his third book, has of late years been revived and adopted, first in America, and subsequently in this country (Gorham, in Guy's Hospital Reports, and Med.-Chir. Trans., Vol. IX.) This Hippocratic remedy has undoubtedly been more successful than any other. Of twenty-eight cases, the details of which were collected by Dr. Osborne, there were only seven recoveries; and

three of these were effected by inflation of the colon with air. Dr. Murphy and Mr. Erichsen have borne strong testimony to its value in discussion on the subject; and the former had recourse to the operation on one of his own children with success (MS. Notes of Dr. Osborne). For its success, the remedy should be employed at an early period, before there has been time for adhesion between the contiguous surface of the volvulus. My friend, Dr. David Greig, of Dundee, has had recourse to this method of treatment in numerous instances with perfect success, and has published an account of his experience in the *Edin. Monthly Med. Journal* October, 1864. By means of the ordinary elastic enema tube, fitted to the pipe of a small pair of bellows, he was able to pass a considerable quantity of air into the rectum, continuing the process till the belly showed signs of considerable distention, and even till uneasiness prevailed. Its beneficial action is indicated by relief of the urgent symptoms, such as straining and vomiting; and gradually a fæcal evacuation is obtained from the bowels. At the same time warm fomentations are to be applied to the belly. The use of large enemata, with manipulation, has also been recommended. A long stomach-tube is to be passed as high up the colon as it will go, and the anus being firmly compressed round it, warm water is to be slowly injected, so as to distend the bowel as much as possible. When the fluid is allowed to come away, the abdomen should be pressed upon with the hands, so as to move about the coils of intestine (Tanner). The earlier any of these remedies are had recourse to, the greater will be the chances of recovery; and the patient may be put under the influence of chloroform to facilitate the manipulations. Gastrotomy, abdominal section, or, as it is now called, laparotomy, has been successful in many cases, where other remedies have failed to give relief. Dr. Hilton Fagge and Mr. Howse have related such a case (Med.-Chir., Trans., Vol. LIX., 1876). The operation was advocated by Benjamin Phillips (see his paper in Med.-Chir. Trans., Vol. XXXI.) The cases for which it seems suitable are in obstructions from bands, diverticula, also intussusception, and the like lesions affecting the small intestine. The object of the operation is to divide the cord-like cause of strangulation (Brinton); or to undo an invagination, all of which may be now easily accomplished under the antiseptic spray. If the bowels be much distended with air they may be punctured with a small trocar and canula. Stercoraceous accumula-

tions must be mechanically removed. Repeated enemata of warm water, delivered through a long tube, will gradually permeate and disintegrate the mass; and when it begins to break up, continued ʒ ii. doses of Epsom salts, with a grain of quinine, in aromatic sulphuric acid and infusion of gentian will gradually bring the bowels to a normal state of activity

Ischuria Renalis—*See Urine, Suppression of.*

Itch—*See Scabies.*

Jaundice — *Definition.*— Certain morbid conditions in which many of the different tissues and fluids of the body are dyed yellow, or otherwise discolored, more especially the conjunctiva and the connective-tissue, from the coloring matter of the bile.

Treatment.—As a general principle, the larger number of cases of jaundice from functional disorder (perhaps four out of five) get well spontaneously, aided by remedies judiciously selected according to the diagnosis already indicated. The first indication is to aim at removing the exciting cause; and in jaundice due to congestion of the liver, purgatives seem to act beneficially in the form of blue pill or Plummer's pill with aloes, and nux vomica with rhubarb pill mass. In cases of acute jaundice—from suppression of the biliary secretion consequent on a powerful nervous shock or mental perturbation—Dr. Anstie has seen two or three doses of hydrochlorate of ammonia, to the extent of grs. xx. every four hours, produce a restoration of the biliary secretion. He regards it as a most powerful restorative of the biliary functions. Acids and alkalies are alike contra-indicated in cases of jaundice resulting from active congestion of the liver. Benzoic acid has been recommended; and Dr. Harley has found it useful in cases of suppression of bile (by innervation, for example); but in cases of jaundice from obstruction it is injurious. Podophyllin is also of use in jaundice from suppressed secretion of bile. It ought to be combined with hyoscyamus. It is especially useful in the cases of feeble liver, combined with vegetable tonics, such as gentian and quinine; but it ought not to be given in cases of jaundice from obstruction. The medicine of all others which has seemed most generally useful is sulphate of magnesia, in half drachm to drachm doses, combined with fifteen grains of carbonate of magnesia, and half a drachm of aromatic spirits of ammonia, given three times a day an hour before food. The sulphate of magnesia maintains a free action of the bowels;

and the carbonate of magnesia neutralizes any excess of acid in the stomach or bowels.

Keloid—*See Cheloid.*

Kidney, Abscess of—*See Nephritis, Suppurative.*

Kidney, Floating—*Definition.*—A floating kidney is a condition in which the kidney has a mesentery or fold of peritoneum attaching it very loosely to the spine, by which it can be moved about to the extent of the length of its mesentery. A movable kidney merely slips a little under the fingers.

Treatment.—Wearing a tolerably tight, elastic abdominal bandage may completely remove the abnormal condition, and will at least relieve the dragging and uneasy sensations. Constriction of the thorax at the lower part by stays or waistbands must be avoided. Constipation and the consequent straining, as invariably aggravating the mischief, must be relieved. Treatment generally must be of a tonic nature (Sawyer, l. c.)

Laryngismus Stridulus—*Definition.*—A paroxysmal spasmodic disease in which the muscles of the glottis are contracted, the vocal cords tightly stretched and so approximated that the glottis is for a time partially or completely closed. In the latter case there is arrest of the respiratory movements and apnœa. In the former case there is stridulous inspiration and dyspnœa. The affection depends upon some morbid excitement of the *par vagum* and its nerve centres, direct or reflex, and is usually seen in infants, especially during the period of first dentition, and in children before the completion of the second year; and in the great majority of cases between the fourth and tenth month. It is also seen in adults.

Treatment.—Two important indications have been fulfilled in carrying out the treatment—viz., the relief of the paroxysm, and the removal of the morbid condition, whether local or general, which gave rise to it.

"The immediate treatment generally falls to the nurse or mother. The little patient should be raised and placed in a sitting posture, and then he may be slapped on the back, cold water may be dashed in the face, and ammonia or strong acetic acid held to the nose. These measures are often successful by giving rise to violent expiratory actions; but remedies calculated to relieve spasms are equally suc-

cessful. The warm bath may be used and emetics given directly there is a sign of the stridor—when the paroxysm is on, the child will not drink. A favorite remedy in Germany, and one that is highly successful, is tickling the fauces with the finger or a feather until vomiting is produced. Depressing enemeta, such as tobacco, have likewise been recommended, but their use is attended with considerable danger. The ordinary rules for the treatment of disease apply here; that is to say, gentle remedies should be used in mild cases, and those of a more powerful character in dangerous ones. Putting the lower part of the child's body in a hot bath and dashing cold water in its face, is a simple and sometimes successful plan. The inhalation of chloroform is a very valuable remedy, but of course, must be used with great care, and cannot safely be employed by non-professional persons. If the child appears to be sinking from the apnœa, the trachea must, of course, be opened, and artificial respiration resorted to. Indeed this should even be adopted by the practitioner should he arrive shortly after the apparent extinction of life. Some practitioners recommend the use of antispasmodic remedies (whether animal, vegetable, or mineral) between the fits" (Morell Mackenzie).

Where the exciting cause of the attack can be traced to dentition, the gums should be lanced; if the affection should appear to be due to intestinal derangement, means must be taken to remove any source of irritation from the alimentary canal, and for this purpose perhaps the best remedy is a dose of castor-oil. Thymic enlargement should be treated by the application of leeches (according to the patient's age and strength), and afterwards by counter-irritation. As regards the constitutional state predisposing to disease, suitable treatment will be found detailed in the various articles in these volumes which treat of scrofula, rickets, hydrocephalus, parasites, and the like. Spasm of the glottis has hitherto been treated as an infantile disorder, but it sometimes occurs in adults. It is usually met with in women, and is commonly regarded as hysterical. In these cases, sedative inhalations (which cannot well be used in the treatment of children) generally give prompt relief.

During the intervals of paroxysm means must be taken to prevent its recurrence. These mainly consist of attention to the state of the alimentary canal. A searching purgative is generally called for to clear out the contents of the bowels—calomel, jalap, and castor-oil are the most use-

ful agents. Belladonna, to the extent of one-sixth of a grain thrice daily, combined with bromide of potassium or of ammonium, may be of use. Sinapisms and liniments are also of use. The diet ought to be carefully regulated. Change of air is generally called for, and the tepid and cold bath must be in daily use.

Laryngitis.—*Definition.*—Inflammation of the lining membrane of the larynx.

Treatment.—In its early stages a warm, moist, and uniform temperature, with complete rest of the parts, is of the first importance. Not only should all use of the voice be interdicted, but the tendency to cough should as much as possible be arrested by the administration of small doses of morphia, especially in those cases in which paroxysmal cough is a prominent symptom. Inhalations of hot steam, or steam impregnated with the volatile principles of benzoin, hops, or conium, are of the greatest service. Hot poultices and fomentations may also be ordered. Neither local nor general blood-letting, blistering, mercury, antimony, nor other lowering remedies are to be recommended; after the acute symptoms have passed off, astringent solutions may be applied to the larynx to hasten a cure.

In children, a warm moist temperature, poultices, warm emulcent drinks, and if there is much dyspnœa, emetics of sulphate of copper or sulphate of zinc, are the most serviceable methods of treatment. When laryngitis occurs in a subacute form, or shows a tendency to become chronic, a regular system of inhaling should be prescribed. Any of the appended forms may be employed; and there are many others contained in the very useful Pharmacopœia of the Hospital for Diseases of the Throat, published by Churchill, 1871. For the admistration of the following remedies, the Eclectic Inhaler possesses great advantages; for whilst the vapor to be inhaled is thoroughly saturated with the volatile principles employed, and is kept at a uniform temperature, the patient is able to inhale without effort. [It can be obtained of Messrs. Bullock & Reynolds, 3 Hanover Street, Hanover Square, London; or of Maw, Son, & Thomson, London.] The inhaler devised by Dr. James Adams, of Glasgow, is also to be commended.

℞. Creasoti, fl. dr. iij.; Glycerine, fl. dr. iij.; Aquæ ad. fl. oz. iij.; mix. A teaspoonful to be added to a pint of water at 150° Fahr, and inhaled for five minutes twice or thrice daily.

Ol. Pini. Sylvestris, fl. dr. ij.–iij.; Mag. Carb. Lev. gr. 60–90; Aquæ ad. fl. oz. iij.; mix., and use as above.

In addition Oil of Juniper, fl. dr. i., ad. fl. oz. iij.; Oil of Santal, m xv.; Oil of Myrtle, mxx., are all of service.

It will be found convenient to prescribe light carbonate of magnesia as a medium, in the proportion of one grain to every two minims of the oil; and the addition of twenty grains of camphor to any of the above makes the inhalation additionally stimulative. When layrngitis is associated with inflammation of the pharynx, lozenges containing guaiacum are very useful in removing the hyperæmic condition. Even when the pharynx is not affected, the experiments of Fournie have proved that lozenges have a decidedly beneficial effect on diseases of the larynx. It is necessary after an attack of acute laryngitis to caution a patient that he is very liable to a recurrence of this affection, and that he should therefore be very careful to guard against all preventible causes of the disease. As laryngitis is more common to those engaged in in-door than out-door occupations, and those living in towns than in the country, Niemeyer recommends out-of-door exercise, with proper precautions, as a valuable prophylactic measure. Acute laryngitis sometimes occurs as a complication of erysipelas; but erysipelatous inflammation of the larynx originating in that part is rare. The local treatment should at first be directed towards arresting the inflammation, by sucking ice, &c.; but when the morbid process is advanced, the treatment is the same as that required for ordinary acute laryngitis. The constitutional treatment should be that applicable to other forms of erysipelas. Tracheotomy, although offering a less favorable chance than in the simple laryngitis, should be performed if the symptoms are urgent. Of the other catarrhal forms of laryngitis may be mentioned those of measles and scarlatina. In measles the affection of the larynx may be either a simple catarrh, or a simple diphtheritic affection. The catarrhal form may occur before the eruption appears, a day or two after the rash has come out, or when it is beginning to decline. Although the inflammation is often severe, it is seldom sufficient to cause anxiety. The diphtheritic form is much less common, and "seldom begins until the eruption of measles is on the decline, or the process of desquamation has commenced. Its appearance is most frequent from the third to the sixth day after the appearance of the eruption; but it oftener occurs at a later than at an earlier period"

(West). The treatment should be the same as that for primary croup. In scarlatina the laryngitis may be either œdematous or croupous : they are fortunately both rare complications. The œdematous form may be one of the manifestations of the exanthem, or may be dependent on debility, or it may be due to the renal affection, which is so common a sequel of scarlatina. The croupy form is not common, and seems to have been peculiar to some epidemics. In all cases of laryngitis associated with scarlatina, there is a great tendency to the ulcerative process. The treatment required is of a tonic and nourishing character, with the free use of well-diluted stimulants. Tracheotomy may be necessary when there is œdema ; but scarification should always be first tried.

In all cases of œdema of the larynx, whatever the cause, scarification and hot steam inhalations, as recommended in acute laryngitis, are the most serviceable aids. When suffocation is imminent, tracheotomy should be performed.

Applications of mineral astringents to the larynx, either with the laryngeal brush, or in the form of atomized inhalations, are of the greatest service ; and the "alternation of topical remedies is often as efficacious in the cure of chronic laryngitis as it is in the treatment of chronic inflammation of other mucous passages." Although Niemeyer is of opinion that "induration of the submucous tissue (of the larynx) is incapable of resolution," it is the daily experience that local treatment of chronic thickening of this region, unless, indeed, it be due to phthisis, is attended with the very best results. Stimulating inhalations may be used with great benefit. "Amongst the remedies I have found most efficacious," writes Dr. Morell-Mackenzie, "are solutions of perchloride of iron (gr. 60-120 ad. fl. oz. i.), chloride of zinc (gr. 20-30 ad fl. oz. 1), sulphate of copper (gr. 15 ad fl. oz. i.), sulphate of zinc (gr. 5 ad. fl. oz. i.), alum (gr. 30-60 ad fl. oz. i.), chloride of aluminium (gr. 30-60 ad fl. oz. i.). The perchloride of iron and chloride of zinc are the solutions I use most largely. Glycerine will also be found a most useful solvent for these agents, as its consistence is better calculated than that of water to keep up prolonged and close contact between the remedy and the affected membrane. I seldom employ solutions of nitrate of silver as applications to the larynx, for whilst I have not found them more beneficial than other mineral astringents, they are much more likely to produce spasm and nausea" (Use of the Laryn-

goscope, third edition, page 98). Of atomized solutions, those of tannin (gr. 5 ad fl. oz. i.), and perchloride of iron (gr. 2 ad fl. oz. i,) are most useful. Bergson's Atomizer, known in this country under the name of Andrew Clark's Spray Producer, Dr. Richardson's Ether Spray Apparatus, and Dr. James Adam's Siegle's Inhaler, are the most convenient for administering atomized liquids. Functional rest is, of course, of great importance in those cases of chronic laryngitis in which the voice is much affected. If complete silence cannot be enforced, the patient should be recommended to speak only in a whisper. Relaxation of the uvula, being a frequent cause of irritation of the larynx, should be treated by astringent lozenges of tannin, rhatany, or kino; and if necessary the elongated part should be cut off. A warm dry climate is of essential service in obstinate cases of chronic inflammation of the larynx; as are also some mineral waters, particularly those of Ems, Ober-Salzbrunnen, Les Eaux Bonnes, Luchon, Cauterets, Aix-les-Bains.

Besides the common form above described, there are certain varieties of chronic laryngitis to which it will be necessary to give a brief consideration. These are—first, those due to a morbid state of some special tissue of the larynx; and, secondly, those due to a morbid condition of the general system, and mainly dependent on constitutional causes. Of the former, we have glandular laryngitis and phlebectasis laryngea; of the latter, syphilitic laryngitis and laryngeal phthisis.

Chronic glandular laryngitis, or chronic inflammation of the minute racemose glands of the larynx, is generally associated with disease of the follicles of the pharynx and tonsils; but, as the glandulæ of the larynx are all of the racemose character, it is better to use the generic term "glandular laryngitis." It is this disease which has most improperly received the name of dysphonia clericorum, or clergymen's sore throat. The most common throat affection of the clergy is not, however, glandular pharyngitis or laryngitis, but merely chronic inflammation of the pharynx and larynx, with paresis of the laryngeal muscles. Glandular laryngitis, on the other hand, is not at all peculiar to those whose profession requires them to make sustained use of the voice, but generally occurs in people of feeble constitutional powers.

The symptoms are similar to those of ordinary chronic laryngitis, but the disease is more intractable. There is a

constant sensation of a foreign body in the throat, and a corresponding disposition to hawk and clear the throat, With the laryngoscope, the enlarged orifices of the laryngeal glands may sometimes be made out. Pathologically, the disease is essentially one of the secretory system, the normal secretion of the minute racemose glands, instead of being clear and transparent, becoming thick, white, and opaque. By some observers it is thought to be due to imperfect or perverted digestion; but it is more probable that the glandulæ of the stomach are simultaneously affected.

The treatment is the same as that recommended for simple chronic laryngitis, except that the use of strong solutions of nitrate of silver is more often indicated than in that affection. There is frequently considerable feebleness of the voice, in which case stimulating inhalations and the application of electricity are the appropriate measures.

The second variety, that of phlebectasis laryngea, first described by Dr. Morell-Mackenzie (*Lancet*, July 6, 1862), consists of a venous congestion of the larynx. It is very uncommon. The symptoms are slight and usually consist in no more than an uneasy sensation in the larynx, and a more or less frequent cough. With the laryngoscope, dark vessels may be seen on various parts of the larynx, particularly on the ventricular bands. The treatment consists in the destruction of the vessels by the electric cautery, and the use of vigorous constitutional remedies.

The varieties of syphilitic laryngitis and phthisical laryngitis depend on a special constitutional condition, and will be treated under Larynx, Ulcer of

Larynx, Abscess of.—*Definition.*—Death of the cartilages, by a molecular or truly carious process, usually preceded by separation of the perichondrium, and sometimes attended with circumscribed collections of pus.

Treatment.—The practitioner's treatment must be directed to the relief of the pain, the dyspnœa, and the dysphagia. For the former, subcutaneous injections of morphia should be administered. The dyspnœa may be such as to render tracheotomy necessary; and in cases where the dysphagia is extreme (as nothing can be done to actually dilate the narrowed œsophagus) the patient must be fed by enemata or the œsophagus tube. The preferable way, in cases which will admit of it, is to use an œsophageal tube with a feeding-bottle attached. By means of an instrument of this kind, in

one of the cases referred to, the patient's life was sustained for more than three months ; and after death there was a considerable layer of fat covering the body. Of course, great care must be taken in passing the tube ; but where practicable, this method of feeding is far more satisfactory in every respect than the use of enemata per rectum.

Larynx, Benign Growths in.—*Definition.*—New formations of benign character, forming projections on the mucous membrane of the larynx, generally giving rise to aphonia or dysphonia, often to dyspnœa, and occasionally to dysphagia.

Treatment.—In cases where the growth is small, does not appear to increase, and does not give rise to functional derangement, no treatment need be adopted. Where the opposite conditions, however, exist, means should at once be taken to eradicate the growth, or to place the patient out of danger by performing tracheotomy. Radical treatment may be divided into internal, that is, removal or destruction of the growth through the mouth with the aid of the laryngoscope ; or external, by operations through the neck. Internal treatment may be further subdivided into Mechanical and Chemical. Mechanical traatment consists in evulsion, by common laryngeal forceps, tube forceps, ecraseurs, or guillotines. Added to this, there are a few cases in which crushing or incision of the base of the growth is effectual. Chemical treatment consists in the application of various caustic solutions,—a process seldom satisfactory—and in galvanic cautery. This last method has been very successful in the hands of some Continental practitioners ; but it cannot be recommended, on account of the complicated and unwieldy apparatus required by the practitioner, and of the great pain often experienced by the patient. External treatment may be divided into thyrotomy, or division of the thyroid cartilage, supra-thyroid laryngotomy, or division of the thyro-hyoid membrane, and infra-thyroid laryngotomy, or removal of the growth through the crico-thyroid membrane, or by an opening made in the trachea. In addition to these various surgical procedures, there is the combined method, in which tracheotomy having been called for, on account of the urgency of the symptoms, the neoplasm is afterwards removed *per vias naturales*. All external measures are attended with less satisfactory results, both as to life and restoration of function, than those resulting from laryngoscope treatment ; and it should be borne in mind that the more serious

surgical methods should never be resorted to unless the tumor in the larynx produces symptoms endangering the life of the patient.

Larynx, Contraction of.—*Definition.*—Narrowing of the passage of the larynx, the result of various lesions.

The *Treatment* of narrowing of the larynx resolves itself sooner or later into tracheotomy. In cases of syphilitic cicatricial thickening, iodide of potassium does little good, and local treatment is of no avail. In chronic tubercular narrowing, treatment is equally futile. In all cases, if the dyspnœa is extreme, tracheotomy must be performed at once, and measures can subsequently be taken for dilating the contracted passage by any of the mechanical devices which have been invented for the purpose.

Larynx and Pharynx, Treatment of by Atomized Fluids.—The *treatment* of diseases of the pharynx and of the larynx by the use of atomized or spray-producing fluids, in which medicated vapor and gases are brought to act upon the parts, has received a great impetus since better appliances have been devised for using such remedial agents. The aim of such instruments is to atomize or pulverize, or very minutely to divide the fluid, by causing it to be thrown as a fine shower or spray, so as to be inhaled as such by the patient. Dr. Andrew Clark's hand-balls, fitted with Bergoon's tubes and Maunder's atomizer, constitute an efficient and useful arrangement for applying fluids in this way up the nostrils, to the back of the throat, or over the entrance to the larynx (Da Costa). Dr. Richardson's well-known instrument for the production of local anæsthesia is also an excellent atomizer of fluid, and may be used for a similar purpose.

Where it is desirable to make the topical application directly upon the diseased part, these are the most simple instruments that can be used without loss of time by the physician; but where inhalation simply of vapor or heated air variously medicated is all that is required, nothing can be better than that used by Dr. Fergus, of Glasgow; or an improved apparatus for spray inhalations devised by Dr. James Adams of Glasgow.

Siegle's apparatus, and Dr. Morell-Mackenzie's electric inhaler, and Martindale's portable inhaler, are all of them useful and valuable instruments for inhalation of suitable remedies.

On this most useful mode of treatment Dr. Da Costa makes the following observations. "(1.) Inhalations by means of atomized fluids are an unquestionable addition to our therapeutic means; but they are nothing but an addition, and not a substitute for all other treatment. (2.) In most acute diseases of the larynx, and still more so in acute disorders of the lungs, their value, save in so far as those of water may tend to relieve the sense of distress, &c., and aid expectoration, is very doubtful; though in some acute affections, such as in œdema of the glottis and in croup, medicated inhalations have strong claims to consideration. (3.) In certain chronic morbid states of the larynx, particularly those of a catarrhal kind, and in chronic bronchitis, they have proved of great value. (4.) In the earlier stages of phthisis, too, they may be of decided advantage; and at any stage they may be a valuable aid in treating the symptoms of this malady. (5.) Their influence on such affections as hooping-cough and asthma is not satisfactorily proved. (6.) They furnish a decided and unexpected augmentation of our resources in the treatment of pulmonary hæmorrhage. (7.) They require care in their employment; and in acute affections we should consider whether, as they have to be used frequently to be of service, the patient's strength justifies the disturbance or the annoyance their frequent use may cause. (8.) In any case, to be of service, they ought to be carried on as a treatment with a distinct object, and not intermittingly or spasmodically resorted to."

Table of doses for Inhalation (Da Costa; (1.) Alum, 10 to 20 grains, to 1 fluid ounce of distilled water. Suitable in chronic catarrhal states of the pharynx and air-tubes, particularly in bronchial affections with excessive secretion, when, as in most inflammatory conditions of the respiratory mucous membrane, it may be advantageously united with opium. In a somewhat stronger solution, 30 grains to the ounce, it is useful in pulmonary hæmorrhage. As an astringent, it is generally more of a sedative, and more suited to conditions of irritation than tannin (Fieber). (2.) Tannin, 1 to 20 grains.—Useful for the same affections as alum. Employed in cases of laryngeal ulceration and excrescences, in œdema of the glottis (Trousseau), and in croup. Here, as well as in pulmonary hæmorrhages, it is used in large doses. In ordinary cases of laryngeal or bronchial disease, it is well to commence with a comparatively weak solution—5 grains to 1 fluid ounce of water. If the remedy occasion much heat

and dryness, its use should be discontinued. (3.) Iron (perchloride of), $\frac{1}{8}$ to 2 grains.—In earlier stages of phthisis; in chronic pharyngitis or laryngitis it may be used in a stronger form—3 grains to 1 fluid ounce of water. As a weak inhalation, it is useful in hysterical aphonia. Stronger solutions —2 to 10 grains to the ounce—are useful in pulmonary hæmorrhage. In ordinary cases in which we wish a non-astringent salt of iron, the lactate, citrate, or phosphate may be also used, though they are not, on the whole, as available as the chloride. (4.) Nitrate of silver, 1 to 10 grains.—Is useful in ulcerations of pharynx and larynx, and in follicular pharyngitis. A face-shield is always to be used. 10 grains to the ounce only to be used in cases of ulceration. (5.) Sulphate of zinc, 1 to 6 grains.—In bronchial catarrh with excessive secretion ; in aphonia connected with chronic laryngeal catarrh. The Chloride of Zinc (2 to 5 grains) is also useful in the same conditions. (6.) Chloride of Sodium, 5 to 20 grains.—Promotes expectoration and diminishes sputa ; employed in phthisis. (7.) Chlorinated Soda (Liquor Sodæ Chlorinatæ), $\frac{1}{2}$ to 1 drachm.—In bronchitis with offensive and copious expectoration ; in phthisis. (8.) Chloride of Ammonium, 10 to 20 grains.—In laryngeal and bronchial catarrh, acute as well as chronic, to promote expectoration ; also in capillary bronchitis. The dose best borne is not above 10 grains to the ounce. (9.) Opium (watery extract of), $\frac{1}{4}$ to $\frac{1}{2}$ a grain.—In irritative coughs, and as an adjunct to allay irritation. Also for its constitutional effects. Dose of tincture of opium 3 to 10 drops. Acetate of morphia, one-twelfth to one-eighth of a grain, has been administered ; but large doses require much caution. (10.) Conium (fluid extract of), 3 to 8 minims.—Irritative cough; asthma ; feeling of irritation in larynx. (11.) Hyoscyamus (fluid extract of), 3 to 10 minims.—Spasmodic cough ; hooping-cough. One-half grain of the extract, gradually increased ; or the tincture may be employed. (12.) Cannabis Indica (tincture of), 5 to 10 minims.—In spasmodic cough and phthisis. (13.) Iodine, 2 to 15 minims of the tincture.—In chronic bronchitis, phthisis, functional aphonia and hay asthma. (14.) Arsenic (Liq. Arsenicalis). 1 to 20 minims.—Nervous asthma (Trousseau). (15.) Tar Water, 1 to 2 drachms of officinal solution.—In offensive secretions from bronchial tubes ; in tuberculosis ; as an antiseptic in gangrene of lungs. (16.) Turpentine, 1 to 2 minims.—In chronic bronchitis with offensive secretions ; in bronchor-

rhœa ; in gangrene of lungs. (17.) Lime Water, used of officinal strength, or stronger.—In diphtheria ; in membranous croup. (18.) Water, Distilled.—Cold, in pulmonary hæmorrhage ; warm water in asthma ; in croup ; and in bronchitis.

For various other modes of applying tropical applications to the larynx, the student is referred to Dr. Morell-Mackenzie's work *On the Laryngoscope.*

Larynx, Ulcer of the.—*Definition.*—Loss of substance of the larnyx, in rare cases the result of simple inflammation, caused either by syphilis or phthisis.

(*a.*) *Syphilitic Ulceration.*

Treatment.—Secondary laryngeal affections are sometimes difficult to cure, but after undergoing certain phases of evolution they may disappear spontaneously. If allowed to run their natural course, condylomata generally disappear at the end of two or three months, but chronic congestion is more intractable. Stimulating inhalations, and the local application of astringents are sometimes of great service. Ulceration of the larynx (secondary) is seldom so severe as to require the application of solid nitrate of silver. In tertiary laryngeal syphilis, large doses of iodide of potassium, in combination with ammonia, and freely diluted with water, are of the greatest use ; but local treatment is also of the first importance. The application of solid nitrate of silver, or of strong solutions of the same salt (60 gr. ad fl. oz. i.), or of sulphate of copper (15 gr. ad. fl. oz. i.), is attended with the most satisfactory results. For applying the solid nitrate the method of fusing a very small portion of the salt on to a curved aluminium wire far surpasses, in simplicity and safety, any other form of laryngeal porte-caustique.

(*b.*) *Phthisical or so-called Tubercular Ulceration of the Larynx.*

In the treatment of phthisical ulceration, remedies similar to those recommended for chronic laryngitis may be employed with advantage. Mineral astringents have a beneficial effect in the early stages, and are useful in relieving the dysphagia when ulceration of the epiglottis has taken place. Sedatives, whether in the form of inhalations or as medicines which allay the cough, and so keep the larynx at rest, are also to be recommended. Treatment, however, is at the best but palliative. Every effort should therefore be made to carry out preventive measures. Congestion of the larynx in patients

of a phthisical tendency, should be treated with the greatest promptitude—first, by proper local treatment; secondly, by complete rest of the voice; thirdly, by a suitable climate—a warm, dry, and uniform temperature being most to be commended. The constitutional treatment required is similar to that which will be found described under "Pulmonary Phthisis."

Lead Palsy.—*Definition.*—A series of morbid phenomena induced by the absorption of the salts of lead contained in solution in drinking-waters, or in various foods and drinks, or conveyed into the system through the integuments of those who are in the habit of handling the soluble salts of lead; or through the pulmonary mucous membrane of those exposed to the influence of vapors containing lead.

Treatment.—The objects to be obtained in the treatment of lead colic are to procure stools, a copious discharge of urine, and perspiration, with a view of eliminating the poison from the body. To allay pain is also an urgent necessity. For these purposes five grains of calomel, fifteen grains of jalap, and one grain of opium, should be administered as soon as the patient is seen; and at the end of two hours about two ounces of camphor mixture, combined with a drachm or two drachms of sulphate of magnesia, and twenty minims of tincture of hyoscyamus may be given, and repeated every two or every four hours, till the bowels are freely evacuated, when relief more or less complete is obtained. The mixture should be continued at proper intervals for three, four, or five days, when the patient, though greatly weakened, has in general recovered. In a few cases, however, the pain continues, and with considerable severity, after the bowels have been freely evacuated. The practice in these instances is to apply a blister to the epigastrium, and to keep the blister open for a few hours. This additional application will generally complete the cure. The patient is also relieved if placed in a warm bath, and at the same time directed to inject repeated enemata of hot water, that stools may be readily obtained. In the absence of the warm bath, a large linseed or mustard poultice should be applied over the abdomen.

With respect to the treatment of lead palsy, it has been believed that sulphur has the power of neutralizing the effects of lead by forming some innocuous compound with it. It is not known, however, whether any such compound is really formed; but lead poisoning in its chronic and constitutional

forms is more successfully treated by sulphur baths than by any other agent except iodide of potassium, to which they form a most important adjuvant. The ingredients of these baths consist of from two to four ounces of the sulphuret of potassium, mixed with from twenty to thirty gallons of water. The ergot of rye (secale cornutum) has been said to produce a considerable increase in the power of the flexor muscles of the arm in about a fortnight, and the improvement gradually extends to the flexors, till at the end of about three months the patient has recovered. This may have been the natural result of elimination of the lead. The experiments of Orfila long ago rendered it probable that lead is removed from the body by the kidneys; and iodide of potassium promotes the elimination of lead in this way. It may be used with advantage combined or not with the citrate of iron, the use of iron, in some form or other, having been found of benefit in cases of palsy from lead contamination. Dr. Parkes has chemically proved that lead can be made to pass off by the urine by the action of iodide of potassium, in the same way as mercury is known to be eliminated. The principle upon which the iodide of potassium acts is that the lead is in actual union with the affected tissues, being retained among them as an insoluble compound; and the iodide of potassium, after its absorption into the blood, combines with the lead, and forms with it a new and soluble salt. The poison is thus liberated from its union with the injured part, dissolved out from the damaged fibre, and once more set afloat in the circulation. Thus the poison and the remedy are cast out together by the urine (Melsens, William Budd). It is necessary, however, to notice the dangerous phenomena which may at first supervene on the administration of iodide of potassium in cases of lead poisoning; and great caution is necessary in the employment of this remedy in man for the first few days. At the moment when the metallic compounds fixed in the body become dissolved or transformed, the phenomena of acute poisoning may occur, caused by their liberation. So much is this the case, that the treatment may be supposed to be at first hurtful rather than beneficial. The patient should have beside him a graduated solution of the iodide of potassium; and should begin with a small dose (fifteen grains during the twenty-four hours), and afterwards increase or diminish it according to his pains and sensations (Melsens). Dr. Fagge has also noticed that the administration of iodide of potassium to a person poisoned by lead, is

sometimes followed by the development of a line in the gums which had previously been absent, and this when the patient was removed from the influence of lead.

Galvanism, in the form of Faradization, ought to be used as a local stimulant to the nerves, with the precaution that its application is not to be continued too long each time. Ten or fifteen minutes, at three different periods of the day, or of every second day, and persevered in for not less than four weeks, will be found of great service (Todd, Althaus). The beneficial influence will follow, although, in the commencement of the treatment, even a current of very high tension does not cause any movement whatever in the paralyzed muscles. In such cases the beneficial influence seems attributable to the restoration of mobility to the molecules of nerve and muscle by an induced current, and which is necessary to enable them to be physiologically active. Severe shocks, especially in the commencement of the treatment, should therefore be carefully avoided, as by such the weakened excitability of nerve and muscle may be reduced, in place of being fostered and developed (Althaus, l. c., pp. 112 and 119). It would be rational, however, to defer the application of galvanism till the lead has been completely eliminated.

Leucocythæmia—*Definition*—A disease *sui generis*, in which the number of white corpuscles in the blood is greatly increased, with a simultaneous diminution of the red. This state is brought about by chronic exhausting diseases, exposure to cold and wet, or serious acute affections—such as typhus fever, pneumonia, puerperal fever, affections of the lymphatic glands or of the spleen, and is attended sometimes by cough or diarrhœa, epistaxis, hemorrhagic effusions, furunculus or pustulous eruptions.

Treatment.—The most varied remedies have been tried without checking the increased formation of colorless corpuscles; but it is suggested that if it is possible to discover the glandular or splenic affection early, before the alteration of the blood has made much progress, it is probable that the disease may be averted. Tonics, nutrients, and stimulants, are indicated to support the system. The use of the nitro-muriatic bath ought not to be neglected, and the indications given under anæmia and chlorosis may be followed. Phosphorus has been administered with some success by Drs. Broadbent and Wilson Fox. Sir William Jenner administered the drug in capsules containing one-thirtieth of a grain

of phosphorus, two or three times a day for four months, without appreciable benefit to the patient. The results generally are unsatisfactory as regards any treatment of these cases.

Leprosy, True—*Definition*.—A constitutional, non-contagious, hereditary affection, essentially chronic in its nature, expressing itself mainly by shining tubercles of different sizes, of a dusky red or livid color, on the face, the ears (and often the extremities)—the skin being thickened, wrinkled, rough, unctuous, divested of hair, and the perspiration highly offensive—in which there is loss of feeling, or other disorder of innervation, and a tendency to ulceration death of the affected parts. The eyes in extreme cases are fierce and staring, and the voice is hoarse and nasal.

Treatment.—The only hope of exterminating leprosy lies in the adoption of hygienic measures tending to improve the general conditions, physical and moral, of the leprous poor. Medicinal treatment is of no avail, unless combined with the regular use of a nutritive unstimulating diet, suitable clothing, protection against the vicissitudes of the weather, personal cleanliness, and exercise in the open air. The medicines which have been found of most service are tonics and alteratives, especially preparations of iron and iodine. Mercury is extremely injurious. Arsenic has for centuries been held in high esteem in India as a remedy in true leprosy. It is given in the following combination:—105 grains of arsenious acid are triturated with five or six times the quantity of black pepper. Thus made into a mass, it constitutes the material of the well-known "Tanjore pill," of which one the size of a "tare" is to be taken night and morning (Waring's Therapeutics, p 110). The systematic use of baths, simple, saline, or sulphurated, are decidedly beneficial. Cupping-glasses or moxas, along the line of the spinal column, has been of marked advantage in relieving the lesions of innervation whether of increased or diminished sensibility. At a very early period of the inquiry carried out by the College of Physicians, the nature of the replies received enabled the college to assure the Secretary of State for the colonies that "there was no evidence which, in their opinion, justified any recourse for the compulsory segregation of lepers." After receiving this decided opinion, the Duke of Newcastle forthwith issued a circular to the Governors of the Colonies, expressing his opinion, "that any laws affecting the personal liberty of lepers ought to be repealed; and that, in the mean-

time, if they shall not be repealed, any action of the executive government in enforcement of them, which is merely authorized and not enjoined by the law, out to cease." There appears no more need (or just about the same) for restricting the liberty of lepers as for restricting the liberty of those afflicted with gout.

Lichen.—*Definition.*—An eruption commencing as small red papulæ, either isolated or confluent. These becoming excoriated, give vent to a serous fluid in considerable abundance, which ultimately concretes into a crust.

Treatment—Glycerine in the following formula is recommended by Mr. Startin: ℞. Acid Nit. dil. ʒ ss to ʒ jj; Bismuth sub. nit. ʒ ss; Tinct. digital., ʒ j; Glycerini, ℥ j; Aq. Rosæ, f ℥ vii ss. "To be applied as a lotion frequently to the affected parts."

The alkalies internally and externally are of service. Bicarbonate of soda, in fifteen grain doses in some bitter infusion, to be increased by eight grains daily till ʒ j is taken in the twenty-four hours (Divergie). Alkaline baths and lotions are to be used at the same time—the lotions containing two or three drachms of the salt to twenty ounces of water.

Liver, Abscess of—*Definition.*—Suppurative inflammation, ending in a circumscribed collection of pus, or in several separate abscesses.

Treatment.—The abstraction of blood is most efficiently accomplished by leeches round the anus. They act more directly on the portal circulation than over the hepatic region. When congestion is known to exist, leeches may be applied with benefit, combined with purgative salines, such as sulphate of soda or Rochelle salts, and antimony as a diaphoretic, to be followed by chloride of ammonium. Hot fomentations applied to the region of the liver are of great service, and the diet should be as limited as is consistent simply with the maintenance of life, as long as acute symptoms exist. Mercury should not be given, except as an occasional purgative, when the local inflammation is subdued, and purgatives are only then of use when the intestinal functions are sluggish. It is still a question whether or not an artificial opening ought to be made, in the absence of fluctuation to justify the operation. "In any cases the opening of a liver abscess is a critical proceeding; but it should be resorted to whenever there is a reasonable prospect of getting at the matter, and when operative proceedings are not so danger-

ous as to be prohibitory, for it is very desirable to anticipate spontaneous opening by any of the usual channels, as all are dangerous. Into the peritoneum, pleura, or pericardium, the result is of necessity almost always fatal; while even into the lung, stomach, or bowel, the danger is often great; and though followed by temporary amelioration, may end in exhausting disease or purulent contamination of the whole system" (Sir Joseph Fayrer). Professor Lister's antiseptic method of procedure appears to me the one which ought to be adopted in opening all hepatic abscesses.

"When there is reason to believe that matter has formed, although the physical signs of it may not be clear, attention should be directed carefully to the evacuations, especially if there be diarrhœa, as the abscess may open into the bowel. This is the probable explanation of recovery in cases where it has been thought that the abscess had either never really formed, or that it had undergone absorption. When opening occurs through the lung or stomach, the symptoms are unmistakable. When abscess has formed, the object is to favor its evacuation, to support the strength, and to allay irritation. Much has been written and said about exploring for liver abscess, and in certain cases, where doubt exists, the proceeding is justifiable, using a small canula and aspirator, when there is enlargement, tenderness on pressure, which causes nausea and disturbance of the heart's action, such as palpitation or sickness, especially if there have been any chills, increase of temperature, or sweats.—In the event of matter being detected at a considerable depth, it may in some cases be aspirated; but it may happen that, on account of its thickness and the presence of flakes of lymph, pus will not pass through the small canula, and no satisfactory result is obtained; but if there be any marked probability of its presence, a large canula may be used and left in after if pus is found, the most careful antiseptic precautions being observed in the subsequent dressings. Whenever the matter lies moderately near the surface, even though a certain amount of liver-tissue intervene, a free incision is best; hemorrhage, should it occur, soon ceases, and there is much better prospect of a free drain afterwards. A large canula may in some cases be preferable. It would signify little which were selected, provided antiseptic precautions be carefully observed, and the exit be free. In the event of exploration detecting matter deep-seated, but under much liver substance, the canula is preferable to the knife, used

with the aspirator, though great care should be taken not to exhaust too rapidly, or with too great force, for fear of injuring the liver tissue surrounding the cavity of the abscess and causing hemorrhage." (Sir Joseph Fayrer, *Lancet* May 8, 1880, p. 709). "Cases of doubtful liver-abscesses present symptoms varying in every degree; at the one extreme cases of general cachexia, with irregular slight febrile attacks, exhibit symptoms as frequently attributable to deranged stomach, or bowels, or lungs only, as to the liver itself; while at the other, slight general enlargement of the organ would be found associated with that peculiar form of 'tenderness' in which pressure over the organ produced an indescribable sensation, inducing either faintness, hurried respiration, palpitation, or nausea with retching, or all of these at once. In all this large class of cases it was the custom of Professor W. S. Palmer, of Calcutta, to plunge a long trocar and canula, of small diameter, into any or all parts of the liver, through a valvular opening, examining on the spot the small quantity of extracted matter for pus globules. It was only in exceptional cases that any signs of pus could be detected. When it was so detected the puncture was generally followed by slight inflammatory action at the seat of puncture, which probably ended in adhesion of the organ to the parietes, and so facilitated the future opening of the abscess. When, on the other hand, no pus was found, a good deal of anxiety was felt in the earlier cases, lest the puncture should be followed by any evil results. Such moments of anxiety soon ceased to recur, for it very rarely happened that the patient did not express himself the next day as feeling very much relieved; and in no case did any bad consequences result from such punctures. The relief was frequently only temporary, in which case a second, a third, or a fourth puncture was made at intervals of eight or ten days. In some, however, one puncture sufficed to cure" (*Lancet*, May 8, 1880, p. 709).

To prevent the entrance of pus into the abdominal cavity, the following method has been recommended by Bégin and Recamier: (1.) Being decided as to the limits of the abscess, the patient is (2) laid on his back, with the upper part of the body bent forward, and the thighs flexed upon the abdomen; (3.) an incision from two to three inches long is to be made over the abscess, dividing the skin, the subcutaneous adipose tissue, the muscles, and the aponeurosis; (4.) the peritoneum is then laid open, as in operating for hernia, by slitting it up

on a grooved director to the same extent as the primary incision; (5.) the wound is then to be dressed with charpie, and to remain untouched for three days; (6.) at the end of three days the dressing is to be removed, when the capsule of the liver will be found to have contracted adhesions to the margins of the wound so firm that the abscess may be opened without the danger of pus passing into the abdomen. The following expedient may indicate whether the liver adheres to the abdominal parietes or not. When the liver is large, and the abdominal parietes are thin, it may be made out "by feeling the edge of the liver, or some prominent part of its surface, and marking the place of this with a pin on the surface of the belly. If the liver be adherent to the abdominal parietes, the line or spot so marked will correspond to the edge or prominence of the liver in all positions of the body. If it be not adherent, the liver will slide along the wall of the belly when the patient draws a deep breath, or changes his posture—the liver will fall, for example, towards the left side when he turns from his back over to that side, and the line or spot will no longer correspond to the edge or prominence in question (Budd, *op. cit.*, p. 122).

An interesting case of hepatic abscess is related by Sir Henry Cooper, of Hull, in the *British Medical Journal* for May 23, 1863. He justly takes exception to the method of Bégin and Recamier, because it may provoke the very danger it is desirable to avoid. In all cases in which suppuration has extended so near the surface as to give the sense of fluctuation, irritation and adhesion of contiguous surfaces have taken place. The process also interposes a serious delay at a critical period. He advocates a direct opening into the abscess, when there is reasonable ground for believing that an external outlet for the matter is the direction taken by the abscess. Peritoneal connections are sure then to have taken place. Tenderness of the tumor is the most satisfactory indication for the operation, and hardened base of effused lymph a certain confirmation. Delay exposes the patient to the risk of rupture of the walls of the abscess by coughing, sneezing, or the like, and to the laceration of any adhesions which may have formed; or it allows him to perish unrelieved from constitutional irritation and consequent exhaustion. A middle course was devised and carried out by Dr. Graves, in the Meath Hospital, in a robust man. External elevation, hardness, and pain, eventually confined to one spot in the right hypochondrium (after acute inflam-

mation of the liver), left to doubt of the formation of an abscess. Hardness was followed by deep-seated softness, yet no tendency was shown by the abscess to point outwards. The swelling remained stationary, and the integument of natural color; but the general strength began to fail, and it became an important question whether the abscess should be opened. It was objected—(1.) That the external tumor was diffuse; (2.) that the exact site of the abscess was uncertain; (3.) that failure to evacuate its contents might prove detrimental. A decision was therefore given against operation by the surgeons of the Meath Hospital. Under these circumstances Dr. Graves remembered that he had seen cases where an incision made over a deep-seated abscess had failed to give vent to the matter in the first instance; yet in the course of a few days the pus found its way to the incision, and burst through it. He therefore proposed that an incision about four inches long should be made exactly over the center of the tumor—that it should be carried through a considerable depth of muscle, and, if possible, be continued to within about one or two lines of the peritoneum. This incision was then to be plugged up from the bottom of the wound with lint, and thus kept open, in the hope that pus might tend towards the incision, and finally burst through it. Such an operation was done. The abdominal muscles were found of considerable thickness, and healthy; and although the incision was very deep, yet the situation of the hepatic abscess was not felt more distinctly. It now became evident that no prudent surgeon would have persevered in an attempt to open directly into it. A result was therefore waited for. In two days the patient sneezed, when purulent matter in very large quantity burst through the wound. It appeared that the incision had not been made exactly over the abscess, but rather to one side of it; for the matter did not come from the bottom, but from the side of the wound; and pressure on the liver on that side caused matter to flow out in abundance through that part of the wound which communicated laterally with the abscess. Had the original incision been continued, it might have failed to open into the abscess (*Dublin Hosp. Report*, Vol. IV., p. 40).

After the abscess has opened, strict rest must be enjoined; and sometimes the cavity is very long in closing up. It must be kept from putrefactive changes by antiseptic dressings. Convalescence is always tedious; and sometimes

cicatrization is imperfect, continuing to discharge pus for years (Frerichs). It has been argued, as already indicated in the experience of Dr. Palmer of Calcutta, that our effort should be directed to detecting by acupuncture the seat of an abscess, and evacuating it as soon as possible; and that this method of exploration or of "prospecting the liver," should be commenced as soon as symptoms present themselves indicating the possibility of abscess. It has been argued that because some cases have recovered after such a method of finding and evacuating an abscess, it is a practice which should be made the rule, in place of waiting for some indications that pus has even formed in the liver (Murray, Cameron). The recommendations to the plan are not yet based on statistical records, and rest upon the opinions or impressions of two or three individual men. Certain it is that the plan recommended is opposed to the well-established principles upon which surgical interference rests, and is opposed to all that is known regarding the pathology of hepatic abscess, as set forth in the carefully recorded facts of Waring, Martin, Morehead, Frerichs, Budd, Maclean and Lowe. It is also stated by Dr. Cameron (the latest exponent of this method of puncture), that in cases of hepatic enlargement, where the trocar has been used more than once in an unsuccessful search for an abscess, the operation was followed by the speedy absorption of an enlargement of the liver, which had resisted all the routine methods of bringing about its dispersion; and that this is a native mode of dispersing hepatic and even splenic enlargements in India (*Lancet*, August 8, 1863, p. 169). Puncturing parts, or acupuncture with a very fine needle, is a surgical operation said to be much in use among the native Chinese and Japanese hakims. But accurate information regarding the results of such operations are not on record. It should be remembered, in dealing with large livers or probable hepatic abscess, that an hepatic abscess always begins from multiple foci (Rokitansky). We must still look to physicians of large Indian experience for information on this important subject; while the antiseptic method of Lister warrants operative interference now which could not have been carried out with safety before.

The time which elapses after opening an abscess till the patient's recovery is generally from one to two months. When convalescence is established, the functions of the liver remain torpid, and its substance often indurated; sub-

sequently, also, the spleen may be enlarged. In such a state Sir Ranald Martin recommends the use of nitro-muriatic acid baths. They promote the depurative functions of the liver, kidneys, bowels, and skin.

"The form and manner of preparing and using the acid bath are as follows:—Take of hydrochloric acid, three parts; nitric acid, two parts; mix the two acids carefully and slowly, so as to avoid evolution of heat; and having waited for twenty minutes, add of distilled water five parts, and mix the whole carefully. For a general bath in which to immerse the whole body:—Pour into the bath about five pailfuls of cold water; add two quart bottles, containing sixty-four fluid ounces of the dilute nitro-muriatic acid, prepared as above, and then sufficient boiling water to raise the temperature to 96° or 98°. The body is to be quickly and thoroughly dried with warm towels; and afterwards the patient must retire to a well-aired and warm bed. The use of the bath is only to be discontinued when tenderness of the gums or general malaise occur; and cuticular irritation from the acid is to be avoided by diminishing its strength. Iron and other forms of tonic remedies may also be administered at the same time, as well as opiates," (Martin, *On Climate*, p. 564, et seq).

Liver, Acute Atrophy of.—*Definition.*—Simple jaundice, which gradually increases, with sensitiveness over the region of the liver, followed by violent constitutional disturbance, expressed by pyrexia, headache, delirium, hemorrhages from various parts, and finally coma. The liver shrinks to one-half or one-third its normal size. A peculiar chemical decomposition takes place in the liver, whereby abnormal proximate principles are formed, which, being carried into the blood, may be discovered in various organs of the body, or, passing out by the kidneys, may be found in the urine.

Treatment.—English physicians recommend emetics and purgatives (Corrigan, Griffin, Hanlon). Frerichs recommends that the stronger purgatives should be simply to remove congestion, such as senna, aloes, colocynth; and the doses should be such as to secure profuse evacuations. When atrophy has commenced, no benefit results from medicinal treatment. Severe pains indicate the use of leeches, cupping, and cold cloths, or fomentations, as recommended under "Enteric Fever." The occurrence of hæmorrhage indicates the use of mineral acids.

Liver, Amyloid—*See Liver, Lardaceous.*

Liver, Cirrhosis of the.—*Definition.*—Interstitial inflammation, with increase of the connective tissue and its subsequent contraction, leading to other alterations and results.

Treatment is the possibility of relieving the disorders of function which threaten life, and so to delay the fatal termination. Absolute abstinence from spirits is indispensable, and the diet should consist of mild, simple articles of nourishment, especially easily digested animal food. Coffee, spices, and articles irritant to the liver must be avoided. Swelling and tenderness indicate leeches and fomentations. Mild saline laxatives may be given; and when the tenderness ceases, the bowels must be kept open by rhubarb and salines. When nausea or vomiting occurs, hydrocyanic acid, belladonna, morphia, or extract of nux vomica, are particularly suitable. The gastric and intestinal catarrh require to be subdued by alkaline carbonates. They lessen the viscidity of the mucous secretion. When pain prevails, cupping or leeches are indicated over the liver, or leeches to the verge of the anus. Saline purgatives, such as sulphate of soda or tartrate of potash and soda (Rochelle Salts), should also be administered, while iced drinks and low diet must be the rule of life.

What has been said under the subject of simple enlargement or congestion of the liver may be referred to here as indicating a line of treatment under the circumstances there provided for. The saline laxatives are best taken as mineral waters, especially at Karlsbad or Marienbad. Springs containing small quantities of iron are also of service, such as Eger, Franzensbrunnen, Kissengen, and Homburg (Niemeyer).

Liver, Congestion of—*See Liver, Simple Enlargement of*

Liver, Fatty.—*Definition.*—(1.) Infiltration or deposit of superfluous fat in the liver-cells, commencing at the circumference of the lobules, from the blood of the portal vein capillaries; (2.) Degeneration of the liver-cells, in which the nutritive process within the hepatic cells is disturbed, so that an abnormal increase of the fat naturally contained in the hepatic cells takes place, which remains there, so that they become engorged with oil.

Treatment.—Dr. Murchison recommends that large quantities of common salt be eaten with the food, while, if the

circumstances permit, the alkaline or saline mineral waters of Carlsbad, Marienbad, Kissengen, Ems, Vichy, Eger, Franzensbrunnen, or Homburg, are to be advised. The diet must be carefully prescribed, and regulated daily.

Liver, Lardaceous.—*Definition.*—The existence of a peculiar homogeneous, translucent, albuminoid material in the hepatic arteries, cells, and texture of the liver, resembling an infiltration, but the albuminoid material is not found as such in the blood.

Treatment.—It is desirable to limit the suppuration of bones as much as possible by early surgical interference. Iodine and iron are the remedies indicated by the nature of the disease and the circumstances under which it occurs; but nothing is known as to the effects of remedies.

Liver, Inflammation of—*See Hepatitis.*

Liver, Simple Enlargement of.—*Definition.*—Simple enlargement of the liver, from fulness or distention of its blood-vessels and bile-ducts.

Treatment.—A restricted and judicious diet is of first importance, with abstinence from rich dishes and fermented liquors. With regard to medicine, Plummer's pill at bedtime, followed by Rochelle salts in a seidlitz powder, or Pullna water, in the morning, or by the usual black draught, or compound mixture of senna, or by such saline purgatives as sulphate of soda and bitartrate of potash (which cause a drain from the portal system of veins), usually give relief. A purgative dose of calomel, especially combined with compound jalap powder, is of all combinations the most efficient in diminishing congestion of the liver. After its action the local weight, the pain, the fulness, and other symptoms subside concurrently, with copious bilious stools. In such cases it seems to act by irritating the upper part of the small intestine, propelling onwards the bile as fast as it flows into the duodenum, thus preventing its reabsorption (Murchison). The bilious accumulations thus evacuated constitute the "bilious stools;" but they are not to be regarded as the result of increased biliary secretion from the liver itself. An active aperient ought to be prescribed every second or third day for ten days or a fortnight after the action of the calomel and jalap purgation (Graves). In chronic congestion the external use of iodine ointment sufficiently diluted is of service. Dr. Graves bears testimony to the value of setons over the hepatic region. Two leeches every second day to the

verge of the anus, and repeated from ten to fifteen times, yield excellent results. Nitro-muriatic acid is a valuable remedial agent. Podophyllin, in small repeated doses, best relieves the engorgement and torpor of the liver in those who have resided long in tropical climates (Gairdner). It may not act for ten, twelve, or even twenty hours, when the purging which results is due to the large amount of bile passed into the bowels. It stimulates the liver to increased secretion. The best mode of administration is to dissolve podophyllin in spirits of wine, in the proportion of one grain to the ounce, and combine it with essence of ginger, in the proportion of ʒ iss. to the ounce. A teaspoonful of this mixture in a wine-glass of water every night, or every second or third night, secures all the advantages of podophyllin without the disadvantages which result when given in pills (Dobell, *Brit. Med. Journ.*, May 24, 1879). Chloride of ammonium is especially indicated when congestion is the prominent condition. It should be given in doses of grs. v. to xx. twice or thrice a day after food, combined either with acids or alkalies, according to the special indications of the case. The skin must be first induced to become moist and perspirable by some diaphoretic. If it is hot and dry, with a temperature of 103° or 104° Fahr., a sixteenth of a grain of tartar emetic should be given every three or four hours till diaphoresis occurs (Dr. Wm. Stewart, *Philadelphia Med. Times*, April, 1878, also under Hepatitis). When colored deposits are present in the skin, chlorate of potass should be combined with the chloride of ammonium. Benzoate of soda is another hepatic stimulant of value (Dr. Dobell). Taraxicum diminishes abdominal plethora :—

Ext. Tarax., gr. xxxvi.; Ext. Aloes, gr. xii.; Ext. Acet. Colchici; Pulv. Ipecac. rad. aa., gr. vi.; misce. Divide in pil. xii. Two pills every night.

An electuary, composed of equal parts of sublimed sulphur and the powdered gum-resin of guaiacum, will be found useful in cases where the congestion of the liver is associated with hæmorrhoids. When dropsy prevails, doses of the diuretic pill of hydrargyrum, squills, and digitalis (a grain and a half of each ingredient), taken night and morning, are attended with benefit. In bilious congestion copious draughts of hot water act as an emetic, diluting the bile, and if some saline purgative be added, the congestion of the liver will be relieved. If pain prevails over the liver, leeches and fomentations are indicated, with perfect rest in the recumbent posi-

tion—the diet consisting of arrow-root, sago, milk and water, barley-water, and afterwards beef-tea when convalescent.

Liver, Waxy—*See Liver, Lardaceous.*

Locomotor Ataxy, Progressive.—*Definition.*—A peculiar disease of the spinal cord, characterized by unsteady and disorderly muscular movements (but with muscular power entire), and more or less progressive loss of the faculty of co-ordinating power (voluntary and instinctive). There is sometimes temporary diplopia, with unequal contraction of the pupils. The course of the disease is slowly progressive ; and the anatomical lesion is generally a (chronic myelitis in the form of) ribbon-like sclerosis of the white posterior columns and horns of the spinal cord, and posterior roots of the spinal nerves, leading to grey degeneration, sometimes with peripheral structure-change in the cranial nerves, and chiefly the second, third, and sixth pairs, in cases where the sight is affected. The disease generally begins in the lumbar region, and may extend throughout the entire cord, as far as the upper cervical portion, and even into the medulla oblongata.

Treatment.—No benefit is to be got from antiphlogistic treatment, unless there be marked evidences of inflammatory irritation. Dry cupping may be of use for the relief of pain. Derivatives are likewise useless. Thermal baths are also injurious. Cool sponging of the body is of great use ; and cold-water treatment generally, especially the use of the cold sponge-bath (Erb).

Phosphorus, in the form of phosphates of metals and salts, of diluted phosphoric acid, as a drink in the daily allowance of water, of phosphate of soda as an aperient, may be given with benefit. Strychnine is objectionable. Nitro-muriatic acid as a tonic, and cod-liver oil as a dietetic agent, may also be of use. Cannabis Indica and belladonna give the greatest relief to the pains. Nitrate of silver is recommended by Wunderlich, in doses gradually increasing to half a grain daily. Phosphuret of iron is also recommended. Dr. Althaus recommends sulphur baths as adjuvants, relieving pains and diminishing numbness.

Flannel should be worn next the skin, and chills from cold and damp carefully avoided, by the use of a chamois leather or spun silk close-fitting jacket over the flannel, and reaching from the height of the clavicles as low as the folds of the nates behind. The diet ought to be of the most nutritious materials which the patient can digest.

So long as there is active local hyperæmia, the use of electricity is hurtful. Faradization may be of use in restoring, to some extent, sensibility to the skin, where local cutaneous anæsthesia has prevailed, after which patients seem to walk better for a time; but when used at all, electricity ought only to be employed during the pauses in the course of the disease, and then with great caution, in the form of a constant current, rather than the induced current, or faradization. The current should be very weak at first, and the daily application for not longer than from three to six minutes, extended over months. Niemeyer has had no success either with nitrate of silver or the constant current of electricity; but he recommends them to be tried.

Lungs, Congestion of.—*Definition.*—An hyperæmia or over-fulness of blood in the capillaries of the lung, resulting in the discharge of blood by expectoration (hæmoptysis); or in an extravasation of blood from capillary rupture into the air-cells, terminal bronchi and the interstices of elastic tissue (pulmonary apoplexy).

Treatment.—The medicines most useful in hæmoptysis are, the bitartrate of potash, in doses of a drachm, repeated every four or six hours, to each dose of which may be added a quarter to half a grain of opium. The mineral acids, as the infusion of roses, with diluted sulphuric acid, in doses of from three to five drops, combined with opium or morphia, every four or six hours. One to three grain doses of the acetate of lead, every four or six hours, may be given, with half a grain of opium to each dose, or combined with dilute acetic acid and laudanum (A. T. Thompson). The muriate of soda, in doses of half a drachm to a drachm, is in estimation with some practitioners on the continent.

In atonic hæmoptysis, ergot is said to be of service, especially in the following combination:

℞. Ext. Ergotæ Liq., ʒ ii.; Tinct. Digitalis, ʒ ii.; Acidi Gallici, ʒ i.; Magnes. Sulph., ʒ vi.; Acid. Sulph. Dil., ʒ i.; Infus. Rosæ Acid., ad ℥ viii.; misce. A sixth part of this mixture to be taken every three hours, till hæmorrhage ceases (Dobell, Warring-Curran). Wunderlich also recommends the secale cornutum, in doses of from five to ten grains, to be pushed until a numb sensation is experienced in the fingers and toes.

The hypodermic injection of ergotine is by far the most efficacious of styptics in hæmoptysis. A grain of (Bon-

jean's) ergotine should be injected on the back of the side of the thorax whence the bleeding comes, and repeated every two or four hours; and fifteen minims of tincture of digitalis should be given every three or four hours, its effect on the pulse being watched (Coghill).

When hæmoptysis is connected with amenorrhæa, preparations of iron often succeed when other remedies have failed. Two grains of the sulphate of iron, with one drachm doses of the sulphate of magnesia, three times a day, often restore the menstrual secretion, and cure the hæmoptysis. It is in this form of amenorrhœa that iron is most successful. When hæmoptysis depends on disease of the heart, cupping from the chest, or moderate bleeding from the arm, combined with the use of the bitartrate of potash, or the mineral acids, to which should be added five to ten mimins of the tincture of digitalis, to give steadiness to the irregular, turbulent, or rolling action of the heart. Repeated dry-cupping, aided by the application of ice down the spine, and by the internal administration of full doses of digitalis—half a drachm of the tincture, or a grain and a half of the powder (Fuller). It is chiefly as an adjunct to other means, when hæmoptysis is attended with much vascular excitement, that digitalis is of service. Full and frequent doses of gallic acid, or lead and opium, may be given, if the circulation is much accelerated; and of spirits of turpentine, in half-drachm doses, if the bleeding is unattended with vascular excitement. The gallic acid is more adapted for chronic cases, and should be given every hour, in eight or ten grain doses, until the hæmorrhage is subdued, or till a dark-green color in the sputa indicates its action on the system. Its efficacy appears to be increased by combination with sulphuric acid, and may be conjoined with opium or digitalis.

The following formula is a useful one:—

℞ Acid. Gallic., gr. xxx.; Acid. Sulph. Dil., ʒ i.; Liquor Opii Sedat., m xxx.; Infus. Rosæ Co., f ℥ vi.; misce. Two tablespoonfuls for a dose every three or four hours (Dr. L. Earle).

Absolute bodily and mental rest must be insisted on throughout, in cases of pulmonary infarction. Stimulation must be resorted to in the first instance; after which the mineral acids, or super-acid salts, appear to offer the best hopes of recovery. If the apoplexy be secondary, and depends on disease of the heart, digitalis may tranquillize its excitement.

Dietetic and General Treatment.—The patient should be placed in bed, with his head and shoulders raised; the window should be partly open, so as to keep the room cool. It has been recommended that the air respired should pass through a respirator containing ice; and it is common to place a bowl of ice immediately before the patient, so that he may suck small portions as often as he can. A large pad of spongiopiline, soaked in chloroform, should be laid on the chest, over the locality of bleeding. The bedclothes should be light but sufficiently warm. The diet should be slops, and these slops cold; and if cooled to a low temperature by ice, so much the better. No red meat, nor beef-tea or stimulants, are to be given; but milk, chicken broth, jelly, and iced lemonade.

Emphysema.—*Definition.*—(1) VESICULAR EMPHYSEMA Relative increase of air in few or many air-cells of the lungs, causing a misshapen enlargement of them, by dilatation or rupture of septa, and the blending of several into one or many great cysts. It is attended with gradual effacement of the functional blood-vessels distributed over their walls, anæmia of the lung in the affected parts, tending to dilatation of the right side of the heart, with anasarca. (2) INTERLOBULAR EMPHYSEMA.—Air infiltrating the meshes of the sub-pleural and interstitial connective tissue of the lungs.

Treatment.—Apart from the management of the bronchial congestion, on the principles already given under Bronchitis, little can be done for the special treatment of emphysemal If bronchial spasm prevail, the spiritus ætheris of the British Pharmacopœia may give relief, of which thirty to sixty minims may be prescribed in camphor water, or in spiritus ammoniæ aromaticus, or in volatile tincture of valerian; or it may be conbined with stimulant doses (one grain) of opium; or with twenty minims of the æthereal tincture of lobelia, belladonna, conium; or the æthereal tincture of Indian hemp and hydrocyanic acid may each in turn be found of service (Fuller). Dry-cupping between the shoulders often relieves passive pulmonary congestion; and if an attack is imminent, an emetic, or unloading the bowels by a dose of the compound jalap powder, may prevent its accession or moderate the paroxysm.

Lung, Gangrene of.—*Definition.*—Disintegration and breaking up of the tissue of the lung. Shreds of lung-tissue may here and there be distinguished; but the whole mass be-

comes converted into a heap of amorphous granular matter, of a yellowish-brown or black color, mingled with drops of oil. The tissue becomes soft and flaccid, in some parts perfectly liquescent, and generally emits a fetid smell.

Treatment.—The chief reliance is to be placed in all forms of stimulants, combined with such tonics as bark or quinine in full and repeated doses. Repeated doses of an ounce of yeast, as well as the influence of chlorate of potass, are suggested by Dr. Walshe. Ammonia has not been found so useful as the mineral acids. Inhalation of the vapor of turpentine, poured upon boiling water, exercises a distinctly remedial power (Skoda). Gargles of Condy's fluid should be freely used, and antiseptic inhalation, as described under "Phthisis." The mineral acids, especially nitro-muriatic, combined with quinine, are the main remedies in the chronic state of this disease. A generous diet, easily digestible, with as much malt liquor as can be taken, are also recommended.

Lupus.—*Definition.*—A spreading inflammation of the skin or mucous membrane, usually of the face, characterized by infective cell-growth, tending to destructive ulceration, but only by accident involving textures deeper than the skin.

Treatment.—The new formation must be removed or destroyed; but opinions differ as to how this is best effected. Mr. Jonathan Hutchinson prefers Volkmann's erasion method. Cazenave recommends chloride of zinc, arsenical paste, or the powder of "Come," Vienna paste (equal parts of chalk and quicklime), and other powerful applications of the like kind. Hebra also recommends cauterization and employs usually strong nitric acid over the unulcerated, and nitrate of silver over the ulcerated surface. It is a remarkable fact in the history of lupus, affirmed by Hebra, that the lupus disappears during acute febrile diseases, and especially during typhus. It seems to recur with convalescence. (See Dr. A. Thomson on Diseases of the Skin, edited by Dr. Parkes, where numerous interesting cases are detailed, p. 310.)

The medical treatment has in view the prevention of the formation of more similar deposits in the substance of the skin by improving the general health. Cod-liver oil, phosphorus, quinine, and bitter vegetable tonics, good food, bracing air, and the judicious use of stimulants, are all useful in this respect. Iodides and preparations of mercury are to be avoided; but arsenic may be given with advantage (Hutchinson). On the other hand, Dr. M'Call Anderson

recommends the use of iodide of starch. [The following is the formula for its preparation: ℞ Iodi, gr. xxiv; amyli, ʒ j. Triturate the iodine with a little water, gradually adding the starch and continuing the trituration till the compound assumes an uniform blue color, so deep as to approach black. The iodide should be dried with a heat so gentle as to run no risk of driving off the iodine, and it ought to be kept in a well-stoppered bottle. On no account should spirit be used in its preparation instead of water. The dose is a heaped-up teaspoonful in a draught of water or water-gruel thrice daily; but it may be safely increased even up to an ounce in some cases]. In using it, care must be taken, first, that the cases are really undoubted cases of lupus erythematodes and not lupus vulgaris; and second, that the medicine is freshly prepared, and in accordance with the directions above mentioned. Dr. Balmanno Squire has devised an improvement upon the treatment of lupus by pricking the skin at short distances with a pointed instrument, as long since advocated by Dubini, of Milan, and subsequently by Volkmann, of Halle. By means of a many-bladed instrument which Dr. Balmanno Squire has contrived, and which has been constructed by Messrs. Weiss, of London, he cuts the skin into thin strips. The Dubini-Volkmann method (known as punctiform scarification) has been highly successful. Dr. Squire's method (termed multiple linear scarification) has proved still more successful. It has been tested and commended in this country by Dr. Walter Smith, of Dublin, and Mr. Malcolm Morris, of London; while in Paris, at the Hopital St. Louis, Dr. Vidal and his assistants treat every Wednesday as many as from forty to fifty patients by this method. The advantages are the same as those which attend punctiform scarification—namely, the setting up of a traumatic inflammation, under which the disease heals; but the superiority claimed for treatment by closely and regularly spaced incisions is a more rapid and at the same time a more complete cure of the disease than can be effected by means of irregularly distributed punctures. Dr. Vidal had observed, in sections of the skin thus healed, the gradual conversion of the lupus cells into fibrous tissue. The advantages of treatment of the disease by the excitement of traumatic inflammation as compared with other means of treatment, are described as being less painful, as causing less loss of substance, and as leaving less permanent trace of its performance than the customary methods of local treatment,

namely, the application of caustics or semi-caustics (*Brit. Med. Journ.*, August 23, 1879, p. 293).

Malignant Purpuric Fever—*See Cerebro-Spinal Meningitis.*

Measles.—*Definition.*—A purely contagious and infectious disease, the virus or contagium passing off in the exhalations of a patient, causing the surrounding air to be contaminated. The disease is capable of inoculation by the blood and secretions. An eruption occurs in crops of a crimson rash, consisting of slightly elevated minute dots, about the size of millet-seeds, and having a small papular centre, scarcely perceptible to the touch, and without any sensation of hardness. Several of these may unite in irregular circular forms, or crescents, or they may be isolated. The eruption appears on the thirteenth or fourteenth day after exposure to infection (Panum, Archiv. Gén. de Med., April, 1851, p. 451, and *Ed. Med. Journal* June, 1858, p. 589, quoted by Murchison). It is preceded by catarrhal symptoms affecting the conjunctiva and air passages for about four days, accompanied with fever, which commences with repeated rigors—*i. e.*, the real incubation period is about ten days. It lasts six or seven days, and the whole duration of the disease is completed in from nine to twelve days. Measles affects the system only once ; and sometimes prevails as an epidemic.

Treatment.—The constitution during measles is little impaired by the short continuance of the fever. The rule, therefore, is to interfere as little as possible as long as the disease is pursuing its normal course, and merely to moderate and subdue symptoms when they threaten danger, knowing that the great majority of cases end in recovery without any medical treatment. The morbilli sine catarrho is usually of such a mild form as to require no other treatment than a milk diet, the customary attention to the bowels, and the prevention of exposure to cold and wet. Measles will not bear exposure of the surface of the body to cold so well as either scarlatina or small-pox, on account of the great tendency to bronchial and pulmonary inflammation. Children must therefore be watched night and day to prevent them lying uncovered, and special care must be taken to avoid exposure to cold during convalescence. An even and moderately moist temperature must be maintained in the room, steam from a boiling kettle of water being admitted. The temperature ought to be regulated by the thermometer, and kept at 60° to 65° Fahr. The

room must also be regularly subjected to a current of fresh air daily, the patient being sufficiently protected at the time.

In the morbilli mitiores the cough, the frequent vomiting, and the heavy catarrhal symptoms which so generally attend the primary fever, render medical attendance necessary from the first moment of the attack. The treatment of these symptoms, however, and also of the eruptive stage, as long as the patient continues free from any serious inflammatory affection of the lungs, need not necessarily be active, it being sufficient to alleviate the cough, allay the vomiting, and check the catarrh by some of the large class of saline laxatives, linseed tea, or mucilaginous mixtures, to which antimonial or ipecacuanha wine may be added, if necessary, as a diaphoretic, and to subdue high vascular action. In making a selection from these, the physician must be principally guided by the state of the bowels and the condition of the stomach of the patient. If the bowels be constipated, the milder salines, as the sulphate of magnesia, are to be preferred. Often, however, a diet of stewed prunes or fruit will be sufficient. On the contrary, if the patient be purged, and the vomiting distressing, a neutral mixture or effervescing draught will be found most beneficial. There are many persons in whom the cough and catarrh are the most urgent symptoms ; and in such cases, if the stomach be quiet, the liquor ammoniæ acetatis, combined with camphor mixture, from its more powerful action on the skin, is an excellent addition. Another remedy, equal or perhaps still more useful, is ipecacuanha wine. Willan was of opinion that an emetic, given on the second or third evening, somewhat alleviated the violence of the catarrhal symptoms, and contributed to prevent the diarrhœa which usually succeeds measles. An emetic is especially useful if the disease be threatened with croup as a complication. During the eruption he adds, "I have not observed any considerable effect from antimonials or other diaphoretics." The use of aconite has been found to moisten the skin ; and certainly helps the emergence and development of the eruption when due, though it seldom reduces the temperature before the eruption comes out, but it reduces the pulse (Phillips). Bathing the feet every evening seems a beneficial application. Emulsions and mucilages afford but a feeble palliation of the cough and difficulty of breathing ; but if there is much oppression, with a sense of tightness, linseed poultice jackets must be applied to the chest. With respect to opiates, they are not advisable should

bronchitis be extensive, and in the early stages especially; opium produces an increase of heat and restlessness, without conciliating sleep. The catarrhal symptoms are frequently accompanied, even in the very earliest days of the disease, with much bronchial inflammation, and sometimes with pneumonia; or these affections may occur at any later period, after the decline of the eruption, from the tenth to the twelfth day of the attack. For these a stimulant treatment is required. If pleurisy alone supervenes, mercury is best used in the form of friction with blue ointment over the chest, a little croton oil being added to promote its absorption (Andrew Anderson). In such cases stimulants are called for—*e. g.* subacetate of ammonia, chloric ether, wine, or brandy.

During the whole course of measles it is necessary to enjoin an abstinence from animal food, and to limit the patient to a low diet and to slops. Liquid food should be given in small quantities at frequent intervals. The chamber should not be subject to any sudden change from heat to cold, and the strictest cleanliness should be observed. With a view to protect the eyes, the room should be kept dark, so that the patient may be prevented reading or using his eyes. In large establishments separation is necessary, to prevent spreading of the disease, if possible. Should the eruption disappear ("striking in of the eruption"), or be retarded, and untoward symptoms appear, it is just as unscientific as it is dangerous to attempt its "restoration." It is dangerous, because the rules usually laid down for this emergency may have an injurious effect on the course of the disease. The disappearance of the eruption is not to be regarded as the cause, but as the result of a bad form of the disease, and due to the general collapse of the patient, in which the skin participates. But this bad form of the disease usually depends on the appearance of some complication, especially pneumonia; and, if this fact be not remembered, and the patient be rubbed with irritating applications, or be placed in a hot bath, with or without mustard, or wrapped up in wet blankets with decoction of mustard, "to bring the eruption out again," we shall often do much harm, even if we succeed in our object, because these procedures do not generally act advantageously on the pneumonia and other complications, while they increase the fever" (Niemeyer, *Text-book of Practical Medicine*). When convulsions occur in children, it is in all cases necessary, in the first instance, to determine the most probable source of the irritation giving rise to the convulsions—*i. e.*, whether

they depend upon the specific poison of the disease, upon dentition, or upon intestinal irritation or cerebral disorder. Hot foot-baths sometimes give relief, as well as sinapisms to the limbs; after which, if the convulsions do not subside, it may be necessary that blood be taken by leeches from the temples. Diarrhœa should not be checked suddenly, but kept under control. The patient ought to remain in bed so long as fever is present, while desquamation is going on, and the cough is severe; and he ought to keep his room so long as catarrh is present. A low state of the general health may finally result, requiring quinine, iron, or cod-liver oil; change of air—especially to the sea-side—and sea-bathing, or cold bathing in salt water.

Measles, German—Rotheln.—*Definition.*—A specific eruptive disease, having an incubation period of ten to fourteen days (Squire), or from two to three weeks (Thomas), followed by fever, watery discharge from the eyes and nose, sneezing, and sore throat. The eruption appears on the third or fourth day, and consists of crimson stigmata, rapidly running together into patches of an irregular shape, with obtuse angles, and of sizes varying from a threepenny to a crown piece, according to the severity of the case. The eruption continues from six to ten days, and terminates in desquamation by furfuraceous scales.

Treatment.—The treatment is similar to that of scarlet fever. The functions of the skin are if possible to be stimulated; and Dr. Paterson found that the aqua acetatis ammoniæ, in the proportion of two ounces to half an ounce of antimonial wine, and four ounces of water, was a most useful remedy. The use of colchicum was also had recourse to with decided benefit.

Meniere's Disease.—(*See Vertigo, auditory*).

Meningitis, Cerebral and Spinal.—*Definition.*—Inflammation of the immediate coverings of the brain and spinal cord, the pia mater, and arachnoid (pia-arachnitis).

Treatment.—As a general principle, remedies have little influence over those forms of the disease which arise during the progress of any specific or constitutional disease, independent of the general treatment indicated for that disease. When pia-arachnitis arises from mechanical injuries, the treatment is generally by bleeding. If the first symptoms are characteristic of inflammation of the meninges of the brain, and we can only conjecture what it may turn out,

leeches behind the ears ought to be applied in the first instance. If this local abstraction of blood prove beneficial, it may be repeated during subsequent relapses. At the outset of the disease laxatives and ice compresses may also be used (Niemeyer). There is, perhaps, no class of cases in which the salutative powers of judicious blood letting become so apparent as in children in whom the disease has been observed early and carefully watched. When the inflammatory symptoms are not decided, and the headache slight, and the disease drags on slowly, a single venesection is admissible. [Dr. Alison relates the following highly illustrative case, confirmed now by the teaching of Niemeyer:—"A boy, aged eight years, of rather delicate habit, and who had complained occasionally for some weeks of headache and disordered bowels, temporarily relieved by laxatives, calomel, antacids, and a careful regimen, but recurring, and attended with gradually increasing febrile symptoms, and shooting pain of head; impatience both of light and sound; pulse gradually rising to 102, distinctly sharp, and beginning to intermit; and then nausea and vomiting, not referable to any medicine taken, but gradually increasing, until it recurred every time that he sat up in bed, for nearly twenty-four hours; and a slight but quite perceptible squint showing itself. The full action of laxatives, and one application of leeches, as well as cold to the head, having failed to make any impression on this course of things, he was bled at the arm (which in such circumstances and at that age has often appeared to me distinctly preferable) to twelve ounces, and the blood was sizy. I do not know what further evidence we could have had of the existence of such inflammation within the cranium as would infallibly, if let alone, have gone on within a few days to delirium, stupor, dilated pupil, slow pulse, succeeded by very frequent pulse, convulsions, and death, and have left after it the usual appearances of the acute hydrocephalus (of Whytt, Cullen and Abercrombie, now described), dryness of the membranes on the surface of the brain, distension of the ventricles of the brain with serum, and some of the marks of inflammatory action either on the membranes or surface of the brain. Instead of this, however, I am quite certain that from the time of the bleeding at the arm, this boy never once vomited, that the intermission of the pulse was never again observed, nor did he again complain of lights or sounds. The pain of the head, although less violent, continued in the evening of the same

day, and twelve leeches were applied within eight hours after the bleeding; and from that time he never once complained of this symptom, nor admitted that he felt it; and from this moment he recovered perfectly, and much more rapidly than he had done from much slighter febrile attacks previously; neither has he suffered from that time to this (now thirty years) any return of serious disease" (*Edin. Med. Journal*, p. 777, March, 1856.) In short, all the symptoms vanished in twenty-four hours, most of them during the flow of blood, and never recurred—a change, under the circumstances, so sudden and sanative as is rarely if ever seen after the use of any other remedy for the same combination of symptoms.]

With reference to the sanative influence of general blood-letting in children for inflammatory diseases, if performed at the outset, Dr. West observes, that such depletion is as important a remedy as in the adult; nor will the most energetic employment of any other antiphlogistic measure enable us to dispense with blood-letting. In a healthy child two years old, a vein (if easily found) may be opened in the arm, and four ounces of blood allowed to flow, if faintness be not earlier produced, without our having any reason to apprehend that the plan adopted is too energetic. The immediate effect produced is greater than that which follows local depletion, and the quantity of blood abstracted is less (West, Diseases of Children). Bleeding in children and in adults exercises an influence quite different—because under totally different circumstances—not yet inquired into; but certainly blood-letting at ages under adult life is soon repaired compared to its reparation after that period. Hasse recommends very small doses of morphia ($\frac{1}{24}$ of a grain) in the early stages.

The first thing to be done by way of medicine is to purge the patient. The purgative is not of great moment, provided it acts freely. Some prefer two to five grains of gamboge, others five grains of calomel, with thirty grains of compound jalap powder. Such doses are to be followed up by a black draught, or the sulphate of magnesia. So difficult is it to obtain the action of purgatives in this disease, that doses of three times the strength for adults have been in some instances required; but such large doses are never to be given until the inefficiency of smaller ones has been ascertained (Sir Thomas Watson's Lectures, No. XXVI). The stools are generally black, or extremely offensive; and, this state of the

bowels corrected, the disease, if sympathetic, often ceases. If, however, the head be not relieved, some leeches should be applied to the temples, and the head should be shaved and surrounded with some cold evaporating lotion, such as a towel dipped in cold spring water, or in vinegar and water, or in solution of the muriate of ammonia, with vinegar.

In chronic cases, Foville strongly recommends the cold douche—pouring cold water over the head from a pitcher held some distance above it. This remedy must be used with caution, as it is a powerful depressant, yet producing less ultimate debility than bleeding. It acts, doubtless, by cooling down the general mass of the blood ; and patients almost always recover consciousness under its influence. To secure a lasting result it must be repeated at intervals of a few hours

In children I have certainly seen good results from inunction with mercurial ointment. (See remarks under the treatment of "Hydrocephalus.") In advanced life it rarely happens that the symptoms are so intense as to demand general blood-letting ; but in vigorous constitutions this measure is sometimes necessary. The cases which demand it are those attended by high cerebral excitement and vascular action. But as a rule local blood-letting is not only infinitely more safe, but more beneficial, and it can be repeated from time to time, as the nature of the symptoms may indicate ; while general blood-letting can very rarely be resorted to more than once, and that only at the commencement of the attack. The beneficial effects of local blood-letting may be greatly aided by keeping the head well raised, and by the constant application of cold water to the scalp ; or the occasional use of bladders filled with crushed ice. The bowels should be opened as rapidly as possible, unless the patient is feeble, emaciated, or greatly exhausted. The most active and searching purge is obtained by calomel and jalap ; or four or five grains of the compound extract of colocynth should be given, combined with two or three grains of calomel, in cases uncomplicated with gout or Bright's disease, and followed in a few hours with a dose of salts and senna. A fair proportion of nutriment must be given, in the form of milk, strong beef-tea, sago, tapioca, or arrowroot ; and the patient should be kept in a quiet, cool, well-aired, and darkened room, and with cold compresses constantly applied to the head. The more active symptoms being subdued, but not till then, a blister should be placed on the nape of the neck. The bowels should be kept open regularly, and the strength

supported by mild, unstimulating nutriment. When nervous irritability continues during convalescence, henbane, or muriate of morphia may be given. In the chronic form the periodical attacks of headache or of insanity may generally be relieved by a brisk purge; and the head should be kept cool by cloths dipped in vinegar and cold water. If vascular excitement prevails, leeches may be applied behind the ears. The bladder must be kept empty of urine by the catheter, and although wine must be withheld during the active stage of the disease, it is beneficial when the vital energies begin to fall (Maclachlan).

The dietetic treatment should be strictly antiphlogistic, the patient especially avoiding all mental excitement; and, if not secluded, he should at least be kept tranquil, not only in body, but also in mind.

Spinal arachnitis, seldom depending on a morbid poison, is perhaps in all cases best treated by bleeding and mild purgatives. General bleeding is sometimes necessary; but local bleeding, either by cupping or leeches, along the vertebral column, is most useful, and cannot be omitted with safety. The medicinal treatment consists in moderate purging by the neutral salts, as the sulphate of soda or the sulphate of magnesia; for, as these act on the bladder as well as on the bowels, they are probably the best remedies. But whatever purgative may be selected, it will be proper to combine it with the tincture of hyoscyamus, or other mild opiate, to procure the patient any relief from his sufferings. Ergot of rye (secale cornutum) has been very much used in France; and Dr. Meryon speaks favorably of its effects, combined with iodide of potassium, in a case which manifested no complication of spinal effusion (*Medical Times and Gazette*, Aug. 31, 1863). The warm bath is an excellent adjuvant in the earlier stages of the disease; whilst in the later stages blisters, setons, moxæ, or the ointment of the tartrate of antimony, are more beneficial, or at least are deserving of a trial. The paralyzing effusion may disappear during their use, combined with the action of diuretics. The external application of belladonna and chloroform will be found of essential service in diminishing the violent pain which accompanies meningitis of the cord (Meryon). Cold, in the form of bladders filled with ice, applied along the spinal cord, may be of service where congestion prevails. Abstinence from all animal diet should be imperiously prescribed throughout the whole course of the disease.

Meningitis, Cerebro-Spinal—*See Cerebro-Spinal Meningitis.*

Meningitis, Tubercular.—*Definition.*—An effusion of serous fluid between the membranes of the brain, or into its ventricles, associated with miliary tuberculosis of the meninges or at the base.

Treatment.—Tuberculous meningitis, in the form of acute hydrocephalus, can only be successfully combated in the first or earliest stage.

If the disease be advanced, no efficient treatment has as yet been determined. The symptoms do not yield to the lancet like those of simple inflammation. Mercury has been used to a great extent, but with little success. In severe cases mercurial ointment has been rubbed on the back and thighs, even in very young children, to the extent of half a drachm to a drachm three or four times in the twenty-four hours. Calomel also has been rubbed on the gums to the extent of three or four grains every four or five hours. It has likewise been given by the mouth in does of two grains every third or fourth hour. Mercury given in these large doses seldom produces salivation in children under three years of age. But the remedy is not successful, and more generally produces spinage-like stools, and irritates the alimentary canal.

On the other hand, Professor Golis of Vienna recommends, after much experience, calomel in quarter or half-grain doses twice a day; also at the same time inunction of an eighth or a fourth of an ounce of mild mercurial ointment into the shaven scalp once in twenty-four hours. The head is to be kept constantly covered with flannel, to prevent any check to perspiration. After a lapse of six or eight weeks, diuretics in the form of acetate of potash, or tincture of squills, or both, are to be given with the mercury. Counter-irritation by issues in the neck are also advocated by him to be kept open for months. Compression of the head by bandaging, or by well applied strips of adhesive plaster, are also to be applied over the whole cranium. Puncture of the skull, if the fluid is arachnoidean, may also prove of service,—not so if the fluid is ventricular. It is to be done with a small trocar and canula at the coronal suture, about an inch and a half from the anterior fontanelle, taking care to avoid the longitudinal sinus. The fluid must be slowly evacuated, and compression of the skull carefully maintained for many

weeks while the fluid is allowed to drain away. The operation has been successful in very young children.

Hygienic measures ought to be of the first importance in the rearing of delicate children, so as to prevent if possible the development of those conditions which lead to effusion of fluid within the cranium. During the course of the disease the diet should be slops and light puddings.

In congenital hydrocephalus the unassisted efforts of nature are incapable of effecting a cure, and it is extremely problematical if medicine is of any use. When, however, the case is deemed hopeless, the propriety of evacuating the water by means of an operation may be entertained. Golis has given the names of twenty-seven writers who have expressed themselves in favor of it, especially if the fluid be slowly evacuated, and at several repetitions of the operation; yet he himself, along with seven or eight others, proscribe it altogether as cruel and useless. But it has been successful; and when the operation is performed, it seems an axiom that the fluid should be allowed to escape gradually, for otherwise extreme faintness and collapse may be expected. In such cases small doses of ammonia, or a few teaspoonfuls of brandy and water may revive the little patient. Should reaction take place, however, at a snbsequent period, a few leeches and a cold lotion ought to be applied to the head. It seems also determined that the younger the child the greater are the chances of success; for if it lives a few years the sutures of the craniun, though open at the top, are united by bone towards the base of the skull, and thus present a mechanical obstacle to their closure; consequently, the operation is more apt to fail. If this disease, though existing at birth, should not develop till later in life, blisters, mercury, and iodide of potassium to salivation are the remedies mostly relied on.

Mercurial Poisoning.—*Definition.*—A series of morbid phenomena, especially peculiar tremors, with cachectic and cerebral symptoms, induced by the absorption of mercurial inhalation of vapors from mercury or its salts, or from the medicinal administration of the salts of mercury in continuous small doses.

The *Treatment* is similar to that already described for the elimination of lead.

Miliaria.—*Definition.*—An eruption of innumerable minute pimples, with white summits, occurring in successive

crops upon the skin of the trunk and extremities, preceded and accompanied with fever, anxietas, oppression of respiration, copious sweats of a rank, sour, fetid odor, peculiar to the disease. The base of the pimples and the skin around are red and irritable.

Treatment of the disease appears to consist in cooling drinks, purgatives, and antiphlogistics.

Morbilli—*See Measles.*

Mumps.—*Definition.*—A specific fever with inflammation of the parotid and other salivary glands, which is contagious and sometimes epidemic.

Treatment.—Constant hot fomentations (after leeching in severe cases) should be applied to the swollen parts. The maintenance of a constant but gentle action on the bowels, by saline cathartics, must be attended to. Absolute rest ought to be enforced, a farinaceous diet enjoined, and no irritating applications ought to be applied to the swollen glands. The disease runs a definite course, and is not likely to terminate unfavorably.

Muscle, Spasm of.—*Definition.*—An affection characterized by pathological contractions of muscles, some painful and some not, but manifested only during the exercise of certain voluntary or instinctive movements (Duchenne).

Treatment in all these cases must be directed towards the removal of the probable cause, and improvement of the general health (see Scrivener's Palsy).

Muscular Atrophy, Progressive.—*Definition.*—A peculiar wasting of muscles, with atrophy of their substance, associated with lesions of grey matter in the centre of the cord—namely, wasting of the ganglionic cells of the anterior horns, with oleo-granular degeneration, and of the anterior roots of the nerves of the spinal cord, and attended by paralysis.

Treatment of wasting palsy ought to be strictly a restorative one, believing that the disease is one of nutritional deterioration of the nervous centres. Preparations of wine and cod-liver oil, with localized faradization, are the most likely agents to improve the condition of the body (Althaus). Local means will aid the hygienic—namely, methodical exercise and douche baths, or cold mineral baths; so also thermal or sulphur baths, and galvanism. Frictions, with stimulating liniments (such as camphor liniment), are

also favorably spoken of (Duchenne, Gross, Meyer, Roberts). "Faradization" ought to be practised at least three times a week, for from five to ten minutes each, and continued at least a month before it is given up, if negative results are only obtained. Every muscle ought to be faradized in a special manner, according as it has suffered more or less in its electric contractility and nutrition. The power of the current ought never to be strong. When the sensibility of the muscle returns, the intensity of the current may be diminished. Its application should never be protracted beyond ten or fifteen minutes at the most—one minute, on an average, being allowed to each muscle, or distributed over several at a time.

If, on the other hand, it turns out, as the searching examinations of Mr. Lockhart Clarke and others would tend to show, that these forms of progressive paralysis or "wasting palsy" are always associated with disease of the spinal cord, the efforts of treatment should, in the first place, be directed to that part of the cord corresponding to the connections of the nerves with the site of lesions—the line of treatment to be pursued being determined by the general symptoms. The application of the constant current of electricity—the positive electrode being placed in the region of the cervical sympathetic, and the negative electrode upon the cervical and upper dorsal regions of the spine—has been followed by long amelioration, if not by positive cure, in the hands of Remak and Benedikt (Clymer, in *New York Medical Journal*, 1866, Vol. III).

Muscular Rheumatism.—*Definition.*—Pain in the muscular structures, increased by motion.

Treatment.—In muscular rheumatism, the local appliances which ensure rest and warmth afford most relief. In lumbago nothing is so instantaneously beneficial as strapping the back from the level of the "seat" upwards, in imbricated layers of straps of adhesive sticking-plaster—emplastrum roborans—spread upon chamois leather, or the common warm plaster of the pharmacopœia may be used (Tufnell). The patient ought to sit with his bare back before a large fire during the process. Calomel purgation is generally indicated, combined with rhubarb and soda, as the excretions are generally greatly at fault. The subcutaneous injection of morphia will generally give temporary relief. Opium may also be necessary internally; and a course of bicarbonate of potash with iodide of potassium may be also indicated.

Myelitis—*See Encephalitis.*

Myocarditis.—*Definition.*—An inflammation of the muscular structure of the heart (extremely rare as an idiopathic disease), which becomes softened, flabby, and finally degenerates in various ways.

Treatment under such circumstances cannot be indicated beyond what has been stated under "Endocarditis;" but free stimulation will be called for.

Nephritis, Suppurative.—*Definition.*—"Inflammation with suppuration of the substance of the kidney."

Treatment.—The treatment of acute nephritis must be according to the usual principles of the treatment of inflammation, by keeping the patient at perfect rest, the application of hot fomentations and poultices, preceded or not by the local abstraction of blood or by dry-cupping. Blisters in such cases are dangerous, and ought to be avoided. The neutral salts, with opiates, are admissible in some cases, especially where calculi or gravel are sources of irritation. Castor-oil, or other purgative substances which do not act so immediately on the kidneys, are more useful, such as compound jalap powder or podophyllin. Should signs of abscess appear, the pus may be evacuated, as in the case of liver abscess, and with the same antiseptic precautions.

Nettle-Rash—*See Urticaria.*

Neuralgia.—*Definition.*—Excruciating pains occurring in the course of nerves, and in their area of distribution, usually of a shooting character, which flash with momentary intensity along the fibres of the affected nerve, occurring in paroxysms composed of momentary shocks following one another in rapid succession (Bristowe); or returning with renewed violence in a part after periods of temporary remission, due to some unknown morbid state of the nerves of sensation or their centres, a symptom of some local lesion, or more commonly of a general affection or cachexia.

Treatment.—When the cause of the neuralgia can be discovered, its removal is the obvious procedure to follow. There can be no question that the disease has often subsided under the use of various remedies; but the tendency in neuralgia to a spontaneous intermission is so great, that it is doubtful whether in any case medicine can be said to have cured it. Opiates are unquestionably serviceable in mitigating the sufferings of the patient, and perhaps in influencing the disease, but not to the extent generally supposed. Bella-

donna, both internally and as a plaster, may sometimes relieve the pain. Stramonium and opium have a similar temporary effect. Chlorodyne is also to be recommended ; and the tinctures of gelseminum and of guarana.

The remedies of most value are the diffusable stimulants, such as sal-volatile, hot tea, quinine, chloral, and croton-chloral, in full doses, and alcohol in small doses, blistering, the application of ammoniacal fluid to the skin immediately over the painful nerves, and the endermic application of morphia. These remedies act by increasing the supply of blood to the painful nerve, and, *pro tanto*, heightening its vital energy (Anstie, *op cit.*, p. 84). The most speedy way of obtaining a temporary relief is certainly the application of a local stimulant, and more especially of some volatile agent, such as mustard, or, still better, chloroform diluted with seven parts of some simple liniment, such as belladonna (Anstie). A rapidly acting blistering fluid is still more effective. But the more profoundly the general health has been affected, and especially the greater the degree of anæmia, the more necessary is it to join with the use of stimulants (both local, such as above mentioned, and general, such as the carbonate and muriate of ammonia, taken in five and ten grain doses respectively), a treatment directed to improving the condition of the blood by "food tonics," such as cod-liver oil, arsenic, or steel, or a combination of some of them, joined with the use of local stimulation by means of frictions with dilute chloroform, and the manipulations of the scientific "shampooer" (Anstie, *op cit.*, p. 87). Dr. Radcliffe reports favorably of the hypophosphite of soda, and believes that the phosphorus of this salt acts directly as a food to the nervous tissue. The subcutaneous injection of small doses ($\frac{1}{6}$ to $\frac{1}{4}$ of a grain) of morphia in solution will give temporary relief, and is especially useful to those patients who are obliged to go through an ordinary day of labor (Anstie, *op. cit.*, p. 87).

When these or other general remedies have proved insufficient, recourse has been had to local remedies. The most efficient of these applications is the alkaloid aconitina, rubbed upon the pained part in the form of an ointment, in the proportion of one or two grains to one drachm of lard. A more convenient and efficient application is the "anodyne amyl colloid," prepared by Messrs. Ferris & Co., of Bristol, from hydride of amyl, aconitina, veratria, and etheral collodion. Morphia similarly used, and blisters, have often exercised a beneficial effect upon the disease. Holding the head over

steam, and the warm bath, are sometimes beneficial in cases of facial neuralgia. The belladonna plaster is also a favorite application. When the neuralgia is superficial, compresses steeped in a solution of atropia have a good effect. For this remedy Trousseau recommends the following formula :—

℞. Atropiæ sulphatis, gr. v. ; Aquæ distillatæ, ℥ iii. ; solve. Renew the compresses several times in the twenty-four hours. Continue them for at least an hour each time, and cover them with oilskin, to prevent evaporation.

When general and local applications are unsuccessful, the cause may be sought for in a diseased tooth or stump, and in a very few instances an exostosis of the stump has been discovered, removed, and the disease cured.. Sometimes, however, even when the patient submits to have every tooth in his head drawn, no relief or benefit may result. The division of a nerve is sometimes had recourse to ; but even this operation is very uncertain. Where the causes of neuralgia cannot be removed, modes of treatment which greatly modify the change of tissue and the nutrition of parts are often beneficial. Chief among these is the use of electricity ; and Niemeyer gives the results of his experience in the following propositions :—

" 1. In treating neuralgia with the induced current, it is best to employ the metallic electrodes known as the electric brush. While one electrode, containing a moistened sponge, is held in one of the patient's hands, or against any part of his body, we stroke the brush along the course of the affected nerve ; if there are any specially painful points, we allow the brush to remain over them rather longer (*electric moxæ*).

" 2. Many cases of neuralgia, which had been previously treated without benefit by the most varied remedies, were completely and permanently cured in from twelve to twenty applications, or even sooner. In other cases no benefit or cure was effected."

" 3. The first sitting shows whether the neuralgia can be cured by the induced current. We can only expect a cure where the pain is decidedly relieved, or entirely disappears, immediately after the first electrization, even if it should only be for a short time. If this temporary result do not take place, the continuation of the treatment will also prove ineffectual.

" The application of the induced current as above directed is very painful. The current employed ought not to be of greater intensity than the patient can easily bear ; the appli-

cations should also be of short duration and frequently repeated. It is only after the patient has actually experienced benefit that he suffers it with patience."

The constant current is far more effective than the Faradic in neuralgia. Some cases that have been treated without result by the Faradic current have been cured by the constant, but never by the reverse. Niemeyer places both poles along the affected nerve, and, without attending to the course of the current, holds the zinc pole on the most painful part and on those parts where the nerve approaches nearest to the surface, as at the supra or infra-orbital foramen, or at the zygomatico-facial foramen, or at the sciatic notch. If it be possible to get the nerve between the poles, as in the cheek or nose, he introduces one pole into the mouth or nose to the point whence the pains radiate, while the other is placed at the corresponding point on the skin. "At first the application of the constant current is not particularly painful; but an unpleasant, burning, piercing pain soon commences, and gradually increases; and where the number of electric elements is large, it may become unbearable.

"The changes induced in the skin at the point of application of the constant current, if the electrodes be applied for a length of time, are far greater than those caused by the induced current. They not only consist in a lively erythema, a decided swelling of the skin, and an increase of the subjacent tissue; but papules and blebs arise on the skin, particularly at the positive pole. It the action continues long, the surface of the elevations sloughs off. These changes take place not only at the point of application, but occur equally, or at least similarly, in the deeper parts, as is shown not only by the increase in volume of the subcutaneous tissue and muscles, but also by the following experiments (Erb), which show a great deal about the mode of action of the constant current in neuralgia and other neuroses, as well as in some diseases of the muscles and joints: If we cross the forearms, placing the volar surfaces in contact, and apply the electrodes to their dorsal surfaces, there will be reddening not only of the parts to which the electrodes are applied, but of the corresponding points on the anterior surfaces. Generally, relief immediately follows the application of the constant current, just as it does that of the induced current; but occasionally the pain is at first increased, and that should not always induce us to stop the treatment. There seems to me no doubt that the curative

action of the constant current, in most cases of neuralgia, is to be explained by the modification of the circulation, endosmosis, or change of tissue in the diseased nerve, its neurilemma, or the parts around. This 'catalytic action' may result from the chemical disintegration induced through the nerves, or the attraction of the constituents of the nutrient fluids toward the pole, or it may occur in some other way" (Niemeyer).

Narcotics, in the form of hypodermic injections of solutions of morphia, are of great value, and it is immaterial whether the injection is made near the seat of pain, or at a remote distance from it. "Subcutaneous injections of morphia constitute the only decided and effectual, and truly invaluable, method of treating neuralgia" (Von Pitha). The hypodermic syringe and the morphia solution are now almost as indispensable accompaniments of the physician as the stethoscope and thermometer. Its use, however, is attended with similar bad results as the taking of opium in any other form. The dose must be gradually increased, and the remedy cannot easily be given up. If it is omitted the patient feels dull, weak, uncomfortable, nervous, and trembles from head to foot, as after an alcoholic debauch. As a palliative it is invaluable, to the extent of one-sixth to one-third of a grain of morphine, injected hypodermically. But in slight cases, and in sensitive persons, and in the young, very much smaller doses may relieve the pain—*e. g.*, the twentieth to the twelfth of a grain. In severe and persistent cases the dose has to be increased; and it is very desirable not to have recourse to such hypodermic injections oftener than twice daily. It is necessary also to employ the remedy with proper caution, with reference to the patient's individuality or idiosyncrasy. The hypodermic treatment with morphia must be commenced tentatively in small doses. The first dose of a morphia injection for an unknown individual must not be more than one-twelfth of a grain; and in very sensitive and delicate women and young people not more than one-twentieth, or even yet less. If the patient is the subject of that peculiar idiosyncrasy of extreme sensitiveness to opium, symptoms of poisoning may supervene. Thus, there may be syncope, spasm of the heart, or an asthmatic paroxysm, the skin being covered with a cold sweat. Fresh air should at once be admitted through opened windows, while the patient's face is diligently fanned. An assistant should also bathe the face and temples, as well as the bared chest, with vinegar, and

these parts are to be sprinkled at the same time with cold water. A strong decoction of coffee is to be administered as an enema, or, when possible, given by the mouth; and, in extreme cases, artificial respiration must be resorted to. In most cases these means will succeed, providing that the dose has not been too large. When the vomiting and disposition to syncope persist without yielding to the usual measures, a careful and interrupted inhalation of chloroform may be useful. If there is a constant disposition to nausea and sickness after the hypodermic use of morphia, it may be counteracted by adding from a quarter to a third of the tincture of belladonna to the morphia solution, then the extract, and, finally, minute quantities (about one-hundredth of a grain) of the sulphate of atropia. The extract answers best (Von Pitha).

The injection should be projected into the subcutaneous tissue, and not into the skin itself; and this may be secured by pinching up a fold of skin, care being taken not to make a double perforation in it. Well known or visible vessels or nerves are to be avoided. The places most eligible for the injections are—the external parts of the arm and thigh, the back, and the integument of the abdomen and nates. The face and neck should be avoided; and the painful regions ought not to be punctured.

"With respect to the preparation to be employed, it may be stated that the acetate and hydrochlorate may be used indifferently. Only in cases in which very large doses are given, as above a grain, need the acetate be preferred, on account of its greater solubility. It will form a clear solution in six parts of water, whereas the hydrochlorate requires twenty parts. Hot water will dissolve it in ten parts, but, on cooling, half of the alkaloid is precipitated; so that if a concentrated solution is wanted, it has to be prepared only just before using it. On the other hand, the acetate requires great care in keeping it in a cool place and shielded from the light. The solution should always consist of morphia and distilled water, without any addition whatever. The favorite addition of glycerine has the disadvantage of causing white flocculi to be precipitated from the originally clear liquid. Belladonna, however, may be added, for the reasons already stated, with great advantage; and although the solution is rendered somewhat turbid, its efficacy is not diminished. It is very desirable that similar combinations with different other substances, and especially other narcotic alkaloids, should be thoroughly investigated" (Von Pitha).

Frictions of the skin with veratrine ointment, in the proportion of gr. iv. to gr. x. of veratrine to ʒ i. of lard; or with aconite ointment, in the proportion of one grain of aconite to one drachm of lard, have also been used with advantage. The application of cold water sometimes, but only exceptionally, does good, especially if the pain is attended by heat—applied as a compress, or as a fine douche. Warmth by means of a hot iron, a stream of warm water, or as a warm cataplasm, may also afford relief. Richardson's spray producer has also been of use; and also acupuncture as recommended by Teale, especially in the neuralgia of joints persisting after rheumatism or spasm. As internal remedies chloral and bromide of potassium combined are of great service.

The treatment of sciatica consists in following out, as far as possible, the removal of the causes and circumstances already noticed as producing the disease. In the rheumatic form, the warm baths are most useful, especially the systematic treatment at Neuenahr, Wildbad, Wiesbaden, Teplitz, and Bath. Iodide of potassium, in large doses, and sulphur, especially in the form of the Chelsea pensioner, appear to do most good. Of other specific remedies Niemeyer mentions the induced, and still more, the constant current of electricity as rarely failing to do good. Oil of turpentine, as an electuary, is also recommended in the following :—

℞. Ol. Terebinth. ʒ i.; Mell. ʒ i., of which a tablespoonful is to be taken twice a day. This is very highly spoken of by Romberg.

With regard to the treatment of mastodynia or irritable breast,—a plaster worn on the breast, if composed of anodyne elements, may soothe the pain and prevent the gland being touched by the patient, and it as well may give support to the breast. Cooper recommends the soap plaster with extract of belladonna, and the following pills :—

℞ Ext. Conii, Ext. Papaver, a a gr. ii.; Ext. Stramonii, gr. ¼ to ½, are mentioned by Romberg as useful.

Œsophagitis.—*Definition.*—Inflammation of the textures of the œsophagus.

Treatment of œsophagitis is by small local bleedings, by warm cataplasms to the neck, and by moderately acting on the bowels. In the treatment of the more chronic forms some sedative is essential. There is always some danger, in the use of the probang, of rupturing the canal, or of causing an ulcer. When the case is hopeless, from the small quantity of aliment which reaches the stomach, life may yet be

prolonged by enemata of soups, milk, egg, wine or other nutritious fluid matters. The question of an artificial opening into the œsophagus or the stomach may have to be considered.

Osteo-Arthritis, Chronic.—*Definition.*—An affection characterized by pain, stiffness, and deformity of one or more of the joints, associated with the deposition of new bone around them.

Treatment.—Chronic osteo-arthritis must not be treated either as gout or as rheumatism. Colchicum is considered by Dr. Garrod to be generally injurious, and so also is alkaline treatment. The course of management may be shortly indicated as follows:—Gregory's powder at bedtime, and more active aperients at regular intervals, are required as a necessity. The action of the skin ought to be encouraged by hot-air baths, the frequent use of the Turkish bath, and Dover's powder at bedtime. Warm bathing is generally attended with relief, and recourse should be had to the mineral springs of high temperature. Schwalbach, Spa, Wildbad, Neuenahr, and Tunbridge Wells, are the best. Guaiacum, if borne by the stomach—combined or not with sulphur, and taken as an electuary in glycerine—is of great assistance (Garrod). The free use of dilute phosphoric acid is recommended by Mr. William Adams. Iodide of potassium is also well spoken of. Whichever of these remedies may be considered suitable for any particular case, it ought to be steadily persevered in for several weeks. Warm clothing and residence in a warm climate, during the winter months, are necessary elements for increasing the comfort of the patient. If much emaciation has resulted, cod-liver oil and fats must be prescribed, combined with the usual tonic remedies—quinine, iron, strychnia, arsenic, and mineral acids—according to the nature of the case. The local remedies must be regulated by the surgeon. Chief of these Dr. Julius Althaus has used with advantage that most active stimulant of nutrition—the continuous galvanic current. It acts as a general tonic to the system, more especially to the nervous system; and relieves one of the chief complaints, want of sleep, when hydrate of chloral fails. The best mode of application for this purpose is to direct the positive pole, armed with a conductor of large surface, to the cervical spine, while the negative pole, similarly armed, is placed on the pit of the stomach. A gentle current, which even patients of exquisite

sensibility can well bear, is thus allowed to flow for from three to five minutes in the direction just described. By this application, the base of the brain, the spinal cord, and the cœliac plexus of nerves, are simultaneously brought under the influence of the current. It also relieves pains, for which object the constant current must be applied to the suffering parts, so that the positive pole, armed with a small electrode, is made to touch the sore points; while the negative, connected with a large electrode, is placed in the neighborhood. The current used may in this instance be somewhat more powerful than where it is employed for general tonic effects; and if a short application, say of one or two minutes, be not successful, this may be extended to four or five minutes. The effect is, in many instances, almost magical, inasmuch as pain, which has been fixed in some particular spot for months and years, is, as it were, charmed away by one or two applications. If such treatment is followed up for a sufficient length of time, even extensive deformities may be improved (*Brit. Med. Jour.*, Sept. 28, 1872).

Pachy-Meningitis.

Treatment.—Circumscribed suppurations, when recognized, must be dealt with by the surgeon, under rigid antiseptic precautions. Evaporating lotions or ice to the head or spine are also indicated. Free action of the bowels (especially of the lower bowel by aloetic laxatives) should be maintained. Circumstances may also indicate iodide of potassium, and pain is best relieved by large doses of opium or morphia. The patient ought to be kept perfectly at rest.

Palsy—*See Scrivener's Palsy.*

Palsy, Shaking.—*Definition.*—Involuntary tremors, continuous and permanent, with lessened muscular power, agitating various members increasingly, allowing no peace; and while purposed movements may exaggerate the shaking, repose does not cause its disappearance, and sleep alone puts a temporary stop to the spasmodic agitation of the affected members. The affection may commence in the hands, arms, or head, and gradually extend over the whole body.

Treatment.—Hyoscyamine is a palliative merely, while strychnine, ergot of rye, hyoscyamus and opium, nitrate of silver, and Calabar bean all aggravate the tremors. The use of the continued current of a galvanic pile has been attended with success in the hands of Remak and Russell Reynolds.

Paralysis, Local.—*Definition.*—Paralysis limited to particular sets or groups of muscles.

Treatment,—Paralysis due to lesions which are destructive of the nerve are beyond medical aid. In cases suitable for treatment, and within the first few days, the agents used with most benefit are,—blood-letting by leeches behind the ear of the affected side, or over the mastoid region. They ought to be applied repeatedly, especially if any pain exists on pressure in that region. Blisters, with dressings to keep them open, medicated by veratria or strychnia ($\frac{1}{2}\frac{1}{5}$ to $\frac{1}{5}$ of a grain sulphate of strychnia or of veratria), mixed with five or six times their weight of pounded sugar. Electrization in the form of faradization by a Stohrer's two-celled volta-electric machine; or in the form of an interrupted galvanic current, from a continuous current battery (as from a Muirhead's battery of fifteen cells), the number of cells being very gradually increased, are agents of much service.

In using faradization each facial muscle should be separately influenced, instead of attempting to pass the current through the facial nerve. The muscles are thus more powerfully influenced, and they are more apt to regain voluntary contractility at different periods, some muscles before others. At first the apparatus should be one capable of producing currents with very rapid intermissions; but when any muscles begin to contract, the intermissions should be few, and the sittings at long intervals (three times a week, for two or three minutes only at a time), otherwise contraction of the muscles is apt to increase and become incurable. The voltaic current, from a continuous current battery, induces contractions when the circuit is closed and when it is opened, and more powerfully at the moment of closure. It is said to restore to palsied muscles the power of contracting under the influence of faradization. When improvement follows the use of the voltaic current from a continuous battery, the number of the cells should be gradually increased as the muscles get less susceptible to their influence, and then the battery may be used oftener. One of the electrodes should be gently moved along the surface of the muscle, just as the brush is used in faradization. During the first weeks it may not be used oftener than once weekly, commencing with six to ten of Stohrer's elements,

When contracture of muscles supervenes, they ought to be stretched or pulled out mechanically. To remedy contraction of the buccinator, Duchenne recommends the use of a

small billiard ball worn for a long time inside the cheek, to be replaced after a time by a larger one. The late Bazire gave favorable testimony to the value of this mechanical aid.

The daily action of the bowels ought to be carefully regulated, especially by such medicines as keep the colon in functional activity. Bichloride of mercury (corrosive sublimate) in small doses, continued till the gums are slightly tender, is sometimes of service. In cases where rheumatism prevails, or periostitic affections, small doses of iodide of potassium, persevered in for a lengthened period, are of service, with the frequent use of phosphate of soda as a daily morning aperient.

Treatment of most of the forms of local paralyses is mainly by the continuous voltaic current to the muscles when the acute symptoms have passed away, and when no fever or local signs of inflammation exist. The use of cutaneous faradization, on a dry surface with a feeble and slowly intermittent current, has also been strongly recommended by Duchenne. Friction, stimulant applications, and blisters are also of use.

Paralysis, Acute Spinal of Adults.—*Definition.*—A sudden feverish attack, with such cerebral phenomena as deafness, coma, delirium, or general convulsions, soon followed by a rapidly developed and complete paralysis, variously distributed over the trunk and extremities; but generally in the form of paraplegia. There is entire relaxation of the paralyzed muscles; an absence of any severe disturbances of sensation; and there is no paralysis of the sphincters nor bedsores. The original paralysis is not progressive; but improvement gradually takes place as to the restitution of movement up to a certain point, which is not uniform. In the end the power of movement in some part is lost forever; a paralytic and withered limb for life is all that can be hoped for (Professor W. H. Erb).

Treatment.—The acute myelitis, if detected, first demands attention. Local abstraction of blood by leeches or cupping should be had recourse to over the cervical and lumbar enlargements. The bowels should be freely moved by cathartics, followed by iodide of potassium in appropriate doses. Rubbing in of mercurial ointment and counter-irritation may afterwards be employed the whole length of the spine, or blister, plaster, or painting with the tincture of iodine. Dr. Althaus has most confidence in the subcutaneous injection

of ergotine (Bonjean's solution in diluted water), one-fourth grain for a child from one to two years of age, one-third grain for a child from three to five years, and half a grain for children from five to ten years, and a grain for patients upwards of ten years; to be repeated as symptoms indicate, once or twice a day. When acute symptoms have subsided, the diseased area within the cord should become the main object of treatment, by induction of the catalytic action of the voltaic current. A large electrode, which will cover the entire diseased area, is to be placed over the lumbar or cervical enlargement, while the other is to be applied to the anterior surface of the trunk. First the anode, and then the cathode, are to act alternately for from one to two minutes at a time, with a moderately strong current. This treatment must be continued for a long time, or repeated at intervals for several years. The faradic current is not to be used at this period. Such are the recommendations of Erb. They differ somewhat from the injunctions of Althaus. "It being most important that the voltaic current should pass through the anterior cornua, it is better to have one pole on the spine and the other on the front part of the body, than to place both electrodes to the spine. If the cervical cord has to be acted upon, place the positive pole to the nape of the neck, and the negative to the manubrium sterni. When the lumbar enlargement is diseased, the positive pole is put to the loins, and the negative a little below the umbilicus; while, when the dorsal cord has to receive the voltaic influence, the positive pole should be slowly guided along the whole dorsal spine, the negative being left stationary at the ensiform cartilage" (Althaus)

If electric contractility remain, much may be hoped for, so long as nerves and muscles have not altogether degenerated. The principles of treatment are the same as have been advocated in analogous diseases—namely, restorative and not depressant. The general health must be improved by the use of baths, with a strong and abundant diet; the use of cod-liver oil, and prolonged sojourn in mountain air. The systematic, active, and persistent application of the voltaic current of electricity is the best means of preserving the functions of the implicated muscles, and of arresting their atrophy and degeneration, provided all other hygienic arrangements are maintained which have already been insisted on as to food, clothing, ventilation, and open air. The cathode is to be applied over all the paralyzed muscles and nerves;

while the anode is best placed upon the vertebral column at the height of the main lesion. The strength of the current should be such as to produce distinct twitchings and lively redness of the skin. The faradic current may, however, still be used when the muscles retain their faradic irritability. The faradic application is to be made with moist electrodes.

Mild purgation may be required; alteratives, especially small doses of mercury, continued for a long time, have been of service; and so also have quinine, iodide of potassium, and iodide of iron.

Friction, kneading, squeezing (massage), and shampooing ought also to be persevered in. Three or four small circular wooden balls, about the size of a walnut, shut up in a box, with holes in its cover, so as to expose one-third of the surface of the balls on a uniform level, makes a good shampooing apparatus.

Paralysis Agitans—*See Palsy, Shaking.*

Paralysis, Bulbar.—*Definition.*—A chronic and progressive affection of the bulbar nuclei, in which there is diminution and subsequent loss of the motor power of the tongue, soft palate, and lips, associated with structural changes in the central nuclei and roots of the motor nerves which supply the affected muscles. The disease progresses always more or less rapidly to a fatal termination.

Treatment.—Faradization is of doubtful efficacy at the commencement, but gives relief at later periods, by temporarily restoring function to the affected muscles, to the lessening of the trouble of deglutition, and by exciting the respiratory acts.

Dr. Dowse relates one case of cure under his care (*Brit. Med. Journal*, March 11, 1876, p. 321). The bulbar paralysis came on after a severe epileptic attack. The paralyzed parts were brought under the influence of galvanism, and injections of one-sixth of a grain of strychnia, and one-twentieth of a grain of atropia were daily used to the lower extremities. At first the induced current from a two-celled Stohrer's battery was several times applied to the tongue without any result; after this the continuous current from six cells of Stohrer's battery was applied, and with the best results, for the tongue was quickly protruded, and as sharply retracted. For some days, however, he had no voluntary power over it; but the use of the daily galvanic stimulus shortly ensured this, and articulation soon became perfect.

It was for some time almost inaudible, and the letter R was the most inarticulate of all the consonants. With this the power of swallowing soon returned, so that he had complete co-ordinate voluntary power over those parts supplied by the bulbar nerves. The last to regain power and sensation were the lower limbs. The muscular atrophy here was so extreme that nothing but the tibiæ and integuments appeared left; but galvanism, frictions, and injections gave excellent effects. He also took cod-liver oil, quinine and phosphorus. Instead of his being a mute, helpless, and emaciated creature, he had complete voluntary power over every part of the body.

When initial pains in the head and neck point to the commencement of myelitic changes, Professor Kussmaul recommends the repeated application of dry-cupping glasses to the nape of the neck every five days, and in full-blooded strong persons he would order blood to be abstracted at the first cupping. Afterwards he would permit the cautious tentative use of the shower douche, and even the jet douche for strong persons. Food and drink of a stimulating kind must be avoided during the first months. As to medicines, nitrate of silver, administered early, is deserving of most confidence. He also recommends galvanization. It may be necessary to administer food through an œsophagus tube, or by nutrient enemata.

Paralysis, General.—*See Paralysis of the Insane.*

Paralysis, Labio-Glosso-Laryngeal.—*See Paralysis, Bulbar.*

Paralysis of the Insane.—*Definition.*—An incessantly progressive form of general paralysis, in which the cineritious substance of the brain is the seat of cloudy swelling of its minute elements—the ganglionic brain-cells—with lesion of minute blood-vessels and increase of connective tissue, associated with peculiar disorder of the intellect, general failure of nerve power, muscular debility, frequent blood extravasation (hæmatoma), convulsions of the nature of apoplexy and epilepsy combined, and tending to involvement of the whole brain in degeneration, softening, and atrophy, so that general and complete paralysis of body and mind results.

Treatment.—Regarding the disease from the commencement as essentially a chronic form of parenchymatous inflammation, confined at first to the convexity of the fore-

half of the hemispheres, and frequently tending to meningitis more or less complete, Dr. Meyer, (following Jacobs of Siegberg) has adopted the method of counter-irritation in its treatment. He keeps open for some months a suppurating surface. For this purpose the head is to be shaven of hair over the centre of the fore part of the skull-cap for a space as large as half the palm of the hand. On the central portion of this shaven space as much tartar-emetic ointment as will cover a shilling is to be rubbed in efficiently, and with some energy, with a linen compress or with the ball of the thumb. On a second application caution and gentleness are necessary, in order that the already loosened epidermis may not be torn away, for the deprivation of the cuticular layers causes exquisite pain. Considerable swelling very soon extends over the frontal region and the face in the course of three or four days, which may even advance as far as the back of the head and neck. By this method an eruption of pustules does not take place; but a large scab comes off in one piece by the frequent application of warm poultices, as soon as the place shows signs of swelling. As soon after the establishment of this suppurating process as the patient's strength will permit, the internal use of iodide of potassium is commenced. The diet must be digestible and of a highly nourishing character. The patient is to be sent out as much as possible for work in the open air, but only in the early and evening hours in the summer months. Exposure of the head to the sun or other source of heat is to be avoided.

Paraplegia.—*Definition.*—A form of paralysis affecting the lower parts of the body, in which both legs, and perhaps also some of the muscles of the bladder and rectum, are paralyzed.

Treatment.—In cases of reflex paralysis means must be taken, first—To diminish the external or peripheral irritation which causes the paralysis; second, To improve the nutrition of the spinal cord; third, To prevent the ill effects of rest on the paralyzed nerves and muscles.

In cases of disease of the urethra or prostate, an injection of a solution of one grain of the extract of belladonna, in twenty drops of laudanum, is to be made into the urethra, and the injection should be retained for half an hour, or even an hour, after which some emollient decoction should be used, such as linseed tea, to wash out the passage. Every two or three days this operation should be repeated. If the bladder be diseased, Dr. Brown-Séquard advises a solution

of one grain of the extract of belladonna, in twenty drops of laudanum, to be used as an injection, after complete emission of urine. Injections of carbolic acid are also of use in counteracting decomposition of urine and epithelium in the bladder. If the prostate is enlarged, a suppository ought to be put at times into the rectum. One of the best suppositories for this purpose is composed of the following ingredients namely:—White sugar, white soap, and gum-arabic in powder, of each three grains; opium, in powder, a grain and a half; or belladonna extract, one grain; or both combined. These being mixed together, the mass is to be formed into a conical shape, and being dipped in melted wax, is ready to be introduced, when required, into the rectum (Simpson). When the irritation causing reflex paraplegia starts from the vagina or uterus, a pill of half a grain of the extract of belladonna, with a grain of opium, surrounded by a piece of cotton wool, is to be introduced into the vagina, and made to surround the neck of the womb. By means of a thread it may be withdrawn so soon as pain ceases or diminishes (Trousseau, Brown-Séquard). Belladonna ought not to be used constantly. Opium, combined with strychnia, is of gseater use in reflex paralysis ; and of all remedies, strychnia is best suited for promoting the second indication, which points to increasing the nutrition of the spinal cord. The dose combined with opium must be a small one—namely one-fortieth to one-thirtieth of a grain daily ; and when used alone, its dose may be one-twentieth of a grain ; and when employed together with belladonna, its dose must be still larger. In cases where no congestion or inflammation of the spinal cord exists, strychnia ought to be persistently employed ; but its use to be suspended at once whenever it produces spasms, or even numbness of the feet in getting out of bed in the morning (Brown-Séquard). Sulphur baths are also productive of great benefit.

The third indication—namely, to prevent the ill effects of rest on the paralyzed nerves and muscles—is best met by the employment of Voltaism and shampooing of the paralyzed limbs. Two or three applications, of ten minutes each, in a week, are sufficient ; but of all things it is necessary that the primary disease (causing by its persistent existence the reflex paralysis) should be cured or mitigated.

Pemphigus.—*Definition.*—An eruption of large vesicles, filled with serous fluid, known as bullæ.

Treatment.—Dietetic and tonic, especially by quinine and

the mineral acids. Arsenic is said to be of use in obstinate cases, improving the general health. Emollient lotions, with or without opium, are useful local applications; also enveloping the parts with india-rubber cloth dressed with sulphur.

Pericarditis—*Definition.*—An inflammation of the fibro-serous membrane containing the heart, and investing it on its external aspect.

Treatment.—The results of recorded treatment are unsatisfactory in the highest degree. Sir Thomas Watson writes, that "in a large proportion of the cases, whether they be treated well or ill, or not treated at all, the patients will seem to recover." Although blood-letting and calomel have hitherto been regarded as two most efficient agents in accomplishing the indications of cure, yet Taylor's analysis of cases shows that pericarditis may come on during salivation. The late Dr. Parkes informed me that he has seen this occur two or three times. It is, then, very doubtful if calomel ever does any good in pericarditis, notwithstanding that its use, so as to affect the gums, is advised by Watson, Graves, Stokes, and Fuller. Professor W. T. Gairdner, Drs. John Taylor, of Hudderford (*Med. Times and Gazette*, 1849), and J. Risdon Bennett, of London (*Lancet*, Dec. 6, 1851), are all unfavorable to such a use of mercury. In all the constitutional diseases in which pericarditis occurs as a complication, mercury is certainly contraindicated. In rheumatism and in Bright's disease, which furnish by far the larger number of cases of pericarditis, mercury is decidedly objectionable; and it is now well-known to be productive of most injurious consequences in Bright's disease. Its use tends to weaken the heart and the system at large, and thus proves a source of additional irritation to the cardiac tissue, by undue reaction on the system.

Venesection is never to be practised. Treatment by bleeding may be carried out by leeches over the præcordial region, or by cupping there in exceptional cases. When the pain is very marked, where it has strongly the characters of angina, leeches are to be applied in moderate numbers over the præcordial space. From four to six leeches (W. T. Gairdner), ten to twenty (Niemeyer), so applied, accordingly to circumstances, followed by fomentations, very commonly relieve the pain, and rapid improvement follows. To judge as to the repetition of blood-letting, the force of the heart must be observed, as indicated by the pulse at the wrist, by the actual strength of its impulse, and by the character especially of the

first sound. If the impulse continues vigorous, and the first sound is undiminished, blood-letting may be repeated by the further *local* abstraction of blood by leeches; but if the impulse has manifestly declined in force, while the first sound is lessened, great caution is required in the further abstraction of blood. Fomentations, sometimes plain and sometimes medicated with opium, are the chief local remedies to be afterwards relied on. In the second stage of the disease, when liquid effusion distends the pericardium, some reliance may be put in treatment by a blister of a large size over the præcordia. Diuretics and iodide of potassium are also to be given. "Stimulants are often imperatively called for. The weakened heart requires to be supported and invigorated. This may be effected by the use of wine, and by the use of opium." If depletion has been excessive—if signs of muscular weakness supervene—if there be evidence that the heart, previous to the attack, was in weakened state—if a tendency to collapse or to a typhoid state manifests itself—"we must give wine, quite irrespective of the physical conditions of the heart" (Stokes). Niemeyer recommends digitalis as a suitable remedy in cases where the beat of the heart is very frequent and insufficient, causing cyanotic and dropsical symptoms. Its effect is then very markedly beneficial. Opium, in doses of one grain (*i. e.*, stimulant doses) every third hour, seems "to expend itself solely on the disease," and its beneficial effects are seen to result when it does not produce contraction of the pupil, nor headache, hot skin, furred tongue, nor constipation (Corrigan, Stokes, Graves, Sibson). Battley's solution is perhaps the most useful preparation. This remedy must be watched closely. There are two more important circumstances to be attended to—namely, that our treatment of pericarditis must depend upon the state of the diseases in which it is first discovered to exist; and it is important to know that pericarditis from acute rheumatism calls for a totally different line of treatment from that associated with Bright's disease, or diffused inflammation of a low type (Sibson). In the rheumatic form, colchicum, in the form of a draught, and the administration of alkaline remedies, are indicated by the constitutional state. Warmth, especially moist warmth, and flying blisters are the best agents to promote absorption. Niemeyer considers that the use of cold applications; such as ice-bladders, applied over the cardiac region, is deserving of great reliance; others condemn cold applications.

Paracentesis is to be recommended in all those cases in which the effusion is so great as to cause alarming distress, orthopnœa, obstruction to the venous circulation, and serious interference with the heart's action. In such cases a fine exploring trocar and canula is to be introduced (not plunged), so as to make a valvular opening below the heart, either to the left of the xyphoid cartilage, or through the fifth intercostal space, close to its anterior extremity, and the fluid drawn off by means of a syringe (Sibson, in *Med.-Chir. Review*, July, 1854). The result may be merely palliative; but, as Niemeyer justly remarks, "even to afford the sufferer opportunity, after the operation, to pass the night in his bed (perhaps for the first time in a long period), and to enable him to sleep a little, is a great gain."

The general principles of safe treatment are summed up Dr. W. T. Gairdner as follows:—(1.) To make large allowance for the insignificant and spontaneously healing class of cases revealed more by physical signs than by symptoms, and to regard them as demanding little active treatment; (2.) to consider rheumatic pericarditis in general as a disease susceptible, to a great extent, of cure under palliative local remedies and fitting constitutional treatment; (3.) to hold the general treatment as subordinate to the constitutional treatment of the disease with which the pericarditis is associated.

Pericardium, Adherent.—*Definition.*—More or less adhesion of the opposed surfaces of the pericardium by inflammatory exudation (adhesive lymph) becoming organized, and with more or less complete obliteration of the pericardial sac.

Treatment must be regulated by the functional difficulties of the circulation, and by the source to which those difficulties may be traced.

Pericardium, Dropsy of.—*See Hydropericardium.*

Peritonitis.—*Definition.*—An inflammation of the serous membrane lining the cavity of the abdomen, and covering the viscera contained in that cavity.

The *Treatment* of acute peritonitis must be active in proportion to the amount of pain, the rapidity of the pulse, and intensity of the inflammatory fever, which is marked by the peculiar depressing influence of the inflammation of the heart's action. In mild cases, when the pain is bearable, the pulse steady and under 100, twenty leeches over the abdo-

men, followed by warm fomentations, with the administration of opium in frequently repeated grain doses, ought to be the basis of treatment. Leeches applied to the abdomen is the only method of blood-letting likely to be useful, and a poultice may be required afterwards to encourage the bleeding in sthenic cases. But where the disease is due to blood-poisoning, constitutional states of ill-health, or to the puerperal state, blood-letting by leeches is injurious. In the severer forms the first indication is to relieve pain. The stomach may be unable to retain food; and vomiting may be present. Under such circumstances great benefit may follow the injection per rectum of a pint of strong meat soup slowly thrown up in three successive portions. After about three hours' relief of pain, a fresh new injection of soup is to be given, when the same relief to pain will follow, the pulse falling from (say) 124 to 104. Small quantities of broth and wine may then be borne by the stomach, administered every two hours (Dr. Anstie). Action of the bowels should be prevented for several days. Opium should be given in doses of one to two grains, repeated as often as its effects subside —generally every two, three, or four hours. Morphia may be given in repeated doses of a quarter to half a grain. Morphia combined with chloroform, as in the formula for chloromorphine or chlorodyne, will be found useful in allaying pain. It is not proven that calomel (inducing mercurialism) has any curative tendency in peritonitis. It has been prescribed traditionally; but the experience of Dr. Taylor regarding mercury in pericarditis, as well as of other physicians regarding the influence of mercury generally in the cure of these inflammations, tends to discard it from our methods of cure in such affections. Nevertheless, in the idiopathic and latent forms, Mr. Meade has found mercury the best remedy. In the purely latent forms he prescribes small doses of the bichloride with some demulcent. One-twentieth of a grain three times a day is sufficient. It may be continued for two or three weeks or more. In the more acute cases he directs the abdomen to be covered with dilute mercurial ointment spread thickly upon lint; and he generally finds that the ascitic fluid begins to be absorbed as soon as the mercury slightly affects the system. Fomentations and water compresses are to be diligently employed on the same principle as described under Enteric Fever. Digitalis, with other diuretics, may assist the cure. In the more chronic forms, where the abdomen has become distended, it is some-

times desirable to let off the fluid by tapping; after which remedies act more readily, and generally prevent the return of the effusion. Diuretics of iodide of potassium, acetate of potass, and squills, also help to effect the removal of fluid. The entire abdomen may be covered with cold compresses, and renewed every ten minutes; but warm cataplasms are better borne than cold compresses by many patients (Niemeyer). In chronic peritonitis I have found iodide of potassium, combined with alkalies, most useful, together with inunction of the abdomen with the iodine or biniodide of mercury ointment. Acute peritonitis has been treated by quinine alone, in large and repeated doses, by M. Beau, at the Hopital de la Charité. The remedy was given in the proportion of twenty to thirty grains in the twent-four hours. When the abdomen can bear pressure, a flannel roller should be firmly applied round the body. Chronic vomiting is a distressing concomitant to be met by effervescing draughts, with m j. or m ij. of dilute hydrocyanic acid, or with m iij. to m v. of tinct. opii.; or one or two drops of creasote in aromatic water. Diarrhœa is common, hence it is necessary to combine any laxative remedy with an opiate; and the bowels may be so irritable as to oblige us to abandon all opening medicine, and to prescribe astringents, as kino, catechu, or hæmatoxylon, or the mistura cretæ composita c. opio, or the acetate of lead, and even pure opium, to the amount of two, three, or four grains a day. Under any treatment diarrhœa is dangerous and distressing. The diet in the acute forms of peritonitis should be of the mildest and least stimulant kind. During the course of this and several other diseases of the digestive system, immense distress and suffering often occur from the accumulation and retention of gaseous fluid in some portions of the intestinal canal (tympanites). Tympanites is best relieved by turpentine enemata; and by the introduction of a rectum tube. When this symptom reaches such extreme development as to endanger life, and after the introduction of a rectum tube fails to procure relief, experience justifies the propriety of making a puncture into the cavity of the bowel (generally the colon), through the abdominal parietes, to permit the gas to escape, and to relieve the tympanites. Life may thus be saved, and cannot be materially shortened by the operation, if it is performed by a trocar of the very smallest exploring size. The air gradually and rapidly escapes by the very smallest orifice, which is rather a separation of tissues than a wound,

and soon closes up so completely as to leave no trace behind. The operation gives the greatest possible relief (See *American Journal of Med. Science*, N. S., XXIV., p. 543; *Obstet. Trans.*, for 1869, pp. 47, 48, by Dr. J. Braxton Hicks, in 1868; *Brit. Med. Journal*, for Oct. 21, 1871, p. 464, by Mr. J. Hancocke Wathen). The operation is not the same as that usually performed on cattle. In them it is generally the rumen or first stomach that is punctured (M'Bride in *Brit. Med. Journal*, Nov. 4, 1871).

Pertussis—*See Hooping Cough.*

Pharyngitis.—*Definition.*—Inflammation of the textures of the pharynx.

Treatment should consist in hot steam inhalations of a sedative character, poultices externally, and scarification if œdema takes place. When the uvula is much swollen and infiltrated with serum, it should be at once removed.

Sub-acute Pharyngitis may occur either as an early stage of the acute form, or as a less serious inflammatory affection. In this condition it is the mucous membrane alone, not the areolar tissue, which is inflamed. The symptoms are less severe than in acute pharyngitis; and *treatment* consists in the application of astringent solutions, and the use of astringent lozenges. The frequent sucking of small pieces of ice is of great service in reducing the hyperæmic condition.

Pharyngitis, Chronic or Granular. — *Treatment.*—The patient's general health must be improved by tonic measures, but the most important part of the treatment consists in the persevering use of local applications. In the exudative form the spots should be scraped, the secretion emptied, and solid nitrate of silver applied to each diseased follicle. Lozenges of chlorate of potash and of bitartrate of potash are useful in stimulating the follicular secretion to a healthy condition. In hypertrophic pharyngitis the raised papules must be destroyed one by one. The best application for this purpose is a paste consisting of equal parts of caustic soda and unslaked lime; this is mixed with water, as required, into a creamy paste, and applied to each papule with a finely-pointed glass or aluminium rod (Dr. Morell-Mackenzie). The caustic effect of this application is instantaneous. The patient therefore should be directed to wash his mouth with water immediately after the application, so as to

prevent any other part of the throat being burnt by contact with the caustic. A combination of ergotine with tincture of iodine is also efficacious (ergotine, grains xx.; tinct. iod., f ʒ i.; glycerine, to make f ℥ i.) To be applied to the pharynx twice a day with a camel-hair brush

In all cases of pharyngeal disease, every form of spice, pepper, mustard, and piquant food should be strictly prohibited, and all fluids should be taken at a moderate temperature.

Pharynx, Abscess of.—*Definition.*—Inflammation of the pharynx, resulting in a limited collection of pus in the form of an abscess.

Treatment.—It is very rarely possible to prevent the formation of pus, and the expedient usually demanded is a speedy opening of the abscess at its most defending part. Cod-liver oil and other anti-strumous remedies are also imperatively demanded.

Pharynx and Larynx, Atomized Fluids in Treatment of—*See Larynx, Pharynx &c.*

Phlegmasia Dolens.—*Definition.*—Obstruction of the veins, radicles, and capillary vessels, with probable implication of the lymphatics, causing a painful, non-œdematous, hard brawny swelling of one or more extremities, attended with great prostration.

Treatment.—Leeches and blood-letting, as recommended by Drs. Davie and Lee, are usually inadmissible. Sedatives and alkaline fomentations, perfect rest, simple diet, and opiates to relieve pain, is the most rational treatment to be followed. "The fluid in which the fomentation flannels are to be wrung out is made by adding one pound of bicarbonate of soda and one ounce of extract of poppies to one gallon of boiling water. The flannels ought to be changed every thirty minutes, and applied over the whole limb, and over the groin and lower part of the abdomen, wherever there is tenderness. The heat and steam from these are to be retained by means of impermeable cloths." Wine, brandy, milk, raw eggs, animal food, ammonia, and bark are sure to be required; and after the acute symptoms have subsided, there is no remedy so beneficial as efficient bandaging, together with the preparations of iron, quinine, and tonic veg-

etable bitters, like calumba, aided by change of residence (Tanner).

Phthisis.—*Definition.*—Lesions commencing with induration of a lobe or lobule of the lungs, ending in disintegration of the new material and of the textures involved in the induration; the formation of caverns, and the accumulation and constant discharge of purulent secretion, with or without the growth of miliary tubercles.

Treatment.—Looking to the varied pathological conditions and textural lesions in the lungs comprehended under the name of phthisis, every case requires special study. In one case anæmia is prominent, and calls for iron, perhaps for arsenic; in another, continued but small hæmoptysis may call for ergot; in another, a racking and frequent cough may call for special applications and remedies; in another, dyspepsia may call for alkalies or acid bitters, or pepsine; in another, nervous unrest may call for bromides; in another, laryngeal troubles may call for special local medication; in another, we have to aim at controlling excessive sweating, or checking an exhausting diarrhœa (Dr. James Sawyer, *Brit. Med. Journal*, 1880, p. 845).

If, unfortunately, a pulmonary catarrh does not abate, or a pneumonia does not resolve itself within the usual period, but catarrhal symptoms prevail in the apices, and pyrexia is persistent, with the severe disturbance of the general health which has been described, extension of the pneumonic process must be prevented by absolute rest in bed, talking being forbidden, and coughing as much as possible repressed. Whenever considerable pyrexia exists in the evening, all duty occupations should be given up, strict rest, equal temperature, the chest to be covered with linseed poultices, frequently repeated, or belladonna liniment, and local bleeding by leeches, if pleuritic pains exist. No counter-irritation should be applied to the seat of lesion while pyrexia lasts. Moderate action of the skin is to be maintained. The body should be sponged with rectified spirits of wine and hot water in equal parts (Coghill). White meats only are to be eaten; and as much milk as may be desired. A pint of "warm milk from the cow" should be taken as often as possible.

Should the pyrexia still continue, considerable digitalis, opium and quinine are the remedies most successful in reducing temperature. Heim's pill was much employed by Niemeyer, as it still is in Germany, for this purpose. It con-

sists of Pulv. herb. Digitalis, gr. x.; Pulv. rad. Ipecac..; Pulv. Opii puri. a a, gr. v.; Ext. Gentiani, q. s.; misce et divide in pil. xx. One pill three times a day. It is of advantage that quinine to the extent of gr. xx. be added to this. Each pill will then contain half a grain of digitalis, one-quarter grain of opium, one-quarter grain of ipecacuanha, and one grain of quinine; all of which may be held in form by glycerine or syrup. Dr. Coghill adopts the following modification : namely, one quarter of a grain of opium ; half a grain of digitalis powder; and from one to three grains of quinine, to be given every three to six hours, watching the effect on the pulse. When there is great dryness of skin and tongue, half a drachm of salicine, and two drachms of liquor ammonia acetatis, may be given instead of the pill. Occasional intercurrent attacks of pneumonia mark extension of lesions. They are asthenic in character, and must be treated accordingly; but in all the sthenic pneumonias or acute bronchitic attacks, no remedy equals the tincture of aconite. It acts as we read of bloodletting doing. It should be given at the rate of one minim every quarter of an hour till the temperature is reduced to the normal—the thermometer being in use every two hours. If the temperature drops too suddenly, quinine must be given in place of aconite.

The general principles of treatment described under "Scrofula," are to be adhered to. The use of so-called "cough-medicines," antimony, ipecacuanha, and squill especially, are to be avoided; also the use of mercury, purgatives, and neutral salts. It is unphysiological to administer narcotics or sedatives when cough is accompanied by expectoration. The latter must be expectorated; if retained, it is injurious. The morbid surface which produces the expectoration must be directly acted on. In the suppurative expectoration of bronchitis or pneumonia, and that from a pneumonic or tubercular excavation of the lung, the processes are identical with the suppurative processes in surgical wounds or ulcers. Dr. Coghill finds that the best mode is to bathe the suppurative surface in an antiseptic atmosphere by the inhalation of such materials as creasote, carbolic acid, and thymol. Warm moist inhalations do not affect the respiratory tract beyond the larynx; and are only of value in affections of that region. When used warm they increase the sensitiveness to cold. By using the breath only as the antiseptic medium (inhaling through the mouth and respiring through the nose), we get the whole of the residual air

in the lungs saturated with the antiseptic material. This is the principle of Dr. Coghill's "respirator-inhaler," which should be used especially after "fits of expectoration," so as to act immediately on the surface which has furnished the matter expectorated. It cannot be used too often; and should quite supersede "cough-mixtures." It is, of course, only of use in the second and third stages of phthisis and the suppurative stage of bronchitis; and especially in the retained fetid expectoration of bronchiectasis. Dr. Coghill's standard formula (to be modified at discretion) for an antiseptic solution consists of one drachm of glycerine, one drachm and a half of creasote, two drachms of carbolic acid, and one ounce of a saturated solution of thymol: of which ten to fifteen minims are to be inhaled twice or thrice a day by the respirator-inhaler. A few drops of chloroform, or of ether, may be added as a sedative to each dose. In the first stage of phthisis and other conditions where there is cough and no expectoration, and in which the cough is injurious by shaking and shattering the tender and infiltrated lung tissue, the following is an excellent formula:—namely, Croton-chloral hydrate and codeia, a a gr. xij.; Aqua Laurocerasi, glycerine, and Syrup of tolu. a a ad. ℥ ij. A dessert-spoonful, or two teaspoonfuls, may be taken every two hours when cough is troublesome.

To foster and cherish an appetite for food is another great aim of treatment. One of the best tonics, if pyrexia does not exist, is the syrup of iron, quinia, and strychnia. Let it be given in very small doses at first; followed up by the use of cod-liver oil, "of the most agreeable, clearest, sweetest, and most scentless kind." The brown oil ought never to be prescribed, except, perhaps, to an Esquimaux. The oil should be given in teaspoonful doses at first. Dr. B. W. Foster, of Birmingham, drew the attention of the Profession to the advantages of ether in promoting the digestion and absorption of fatty food, and especially of cod-liver oil. A stomach once intolerant of all fat will good-naturedly accept full doses of cod-liver oil after the use of ether. Sometimes it has been given separately, before or after the oil; but it is best given combined with the oil—a mixture now generally known as "etherized cod-liver oil." To every two drachms of the oil ten, fifteen, or twenty minims of ether are to be added, according to the wants of the case. The *Æther purus* of the British Pharmacopœia must be used, so that the oil may not be rendered muddy, as it will be if the ether

contains alcohol or water. The ordinary dose of oil ought not to exceed two drachms, to which more than twenty drops of ether may be added, if necessary. The ether is indicated wherever there is inability to digest fat, of which it makes an emulsion. It seems to determine, when introduced into the stomach, a considerable flow of pancreatic juice (Claude Bernard; See *Brit. Med. Journal*, Nov. 21 and 28, 1868; also, *Medical Press and Circular*, 1869). Extract of malt (Trousseau) is a remedy of recent repute. It is a genuine extract, consisting of the soluble constituents of the malt and of the bitter extractive matter of the hop. Two or three table-spoonfuls of it are to be taken daily, diluted in spring water or in warm milk, or in any other liquid that may be desired. There should be a careful choice of meats and drinks. Meats rich in osmazone and roasted are to be preferred; wines and malt liquors are better than mere alcoholic fluids when alcoholics are required. Broth made of coarsely brown rye meal, beef, mutton, or other flesh meat, boiled to make a soup, is also of service as a diet. I have found the following soup also very serviceable: Take of linseed half an ounce; fine bran, one ounce; water, one quart. Boil these for two hours, and strain; then add beef, mutton, or any other meat that may be fancied, to the amount of one pound, and boil to a soup, with vegetables, to which celery seed or other flavoring may be added. The whole quantity ought to be reduced one-third.

Arsenic is an efficient improver of the general nutritive and assimilative functions. One or two drops of Fowler's solution, or $\frac{1}{50}$ of a grain of arsenious acid, should be given once, twice, or thrice a day, during the meal, continuing it for months, with occasional intermissions (Clymer). Decided benefit may follow the use of iodide of potassium, which may be combined with the ammonio-citrate of iron, or tincture of the muriate, in a bitter infusion with calumba or cascarilla. Chloride of calcium has been used for some years by Professor James Sawyer, of Birmingham, who writes very highly of its advantages in combination with cod-liver oil or its etherized emulsion. He gives 10 grains, dissolved in a drachm of water and with a drachm of glycerine, in a wine-glass of milk, twice a day, immediately after meals (*Brit. Med. Journ.*, June 5, 1880). Dr. Coghill, from his extensive experience at the large hospital at Ventnor, regards the hypophosphites and lactophosphates alternately as the best

general tonics in phthisis. They are in no way specific. They should not be given if the temperature in the evening is above 99.4° Fahr., and, on account of their pyretic character, should only be given after breakfast and lunch. The hypophosphite of iron is so powerfully pyretic as only to be given in extreme anæmic phthisis, where the whole daily thermometric range is low. Its formula consists of Hypophosph. Sodæ, Hypophosph. Calcis, a a ʒ i.; Glycerini vel Syr. Limonis, ℥ ij.; Decoct. Cascarilla ad., ℥ vj.; of which a table-spoonful in water may be taken as required, to which three to five minims of Liq. strychniæ is a good addition to increase appetite. The pharmacopœal syr. of the lactophosphates is very good; also the French "Dusart's." If an aperient is wanted it should be given early in the morning. Its necessity very often in phthisis depends on a sluggish liver, hence the following is a good formula:—Salicylatis Sodæ, ʒ ij.; Phosph. Sodæ, ʒ v.; Sulph. Potass. ad, ℥ ij.; Pulv. Zingib., ʒ i.; of which a teaspoonful in hot water is to be taken early in the morning. If there is an elongated uvula, the end should be snipped off; if there is irritation about the pharynx and upper part of the larynx, it may be relieved by the inhalation of some of the atomized fluids.

Counter-irritation to the chest-wall is a stereotype method of cure in local pulmonary congestions. When properly used in the earlier stages, before there is much loss of strength, it is undoubtedly beneficial; but later it is weakening and annoying. Croton-oil liniment is the chief favorite; but a prompt and not too severe application of the following ointment is recommended by Dr. Fuller:

℞. Hydrarg. Chlor. Mit., gr. viij; Iodinii, ʒ ss.; Alcohol, f ʒ iss.; Unguent. Simp., ℥ j. M. Rub in a portion over the affected lung, morning and evening, until a pustular eruption comes out

A solution of the nitrate of silver (thirty grains to the ounce of distilled water) may be painted on the skin beneath the clavicles every evening until the skin is darkened, and repeated after the cuticle peels off. Gentle and continuous irritation of the skin may be kept up by wearing constantly on the chest a piece of flannel wet with a weak solution of iodine in glycerine and water, covering the cloth with oil-skin, to prevent too rapid evaporation and soiling of the clothes. The night-sweats, so often annoying and profuse, diminish under general systemic improvement and restored cutaneous functions. The best anhydrotic, and almost the

only one in use at the hospital at Ventnor, in the Isle of Wight, is a pill at bedtime, containing $\frac{1}{80}$ of a grain of atropia, which may be combined with digitalis and quinine. Bathing with vinegar and water, spirits of wine and warm water, alum and water, are well-known remedies, as well as gallic and tannic acids, and infusion of common garden sage. To relieve the diarrhœa Dr. Coghill finds the lead and opium pill of the British Pharmacopœia the best astringent, with a milk and arrow-root diet. A flannel bandage around the abdomen should be worn. Bismuth, with opium, is also of use. To control the exhausting attacks which occur in the more advanced stages, Dr. Frank, at Cannes, suggested the use of coto bark; and Dr. J. B. Burney Yeo (after an experience of over three years) has found it to arrest the flux and relieve intestinal pain and irritation in a short time. A fluid extract of coto is prepared by Ferris & Co., of Bristol, the dose of which is from five to eight minims (*The Practitioner*, 1879, p. 257).

As regards the prevention of phthisis, although Sir Thomas Watson states that he does not believe it to be contagious, he adds :—"Nevertheless I should, for obvious reasons, dissuade the occupation of the same bed, or even of the same sleeping apartment, by two persons one of whom was known to labor under pulmonary consumption" (Lectures on the Practice of Physic). It behooves the physician to warn the patient's friends of the dangers incident to long continued attendance on him, especially if the disease be in an advanced stage. It would be the height of imprudence for a healthy person, especially if young and of a scrofulous diathesis, to sleep in the same bed, or even in the same apartment, with a consumptive patient; for although the malady might not be communicated directly from one to the other, unless possibly under the condition of some tubercular matter being accidentally introduced into his air-passages or into some other part of his system, the surroundings and the air would be calculated to predispose him to the disease" (Fuller, On Diseases of the Lungs and Air-passages, p. 431).

It is of importance to know the physical nature of the climates of the world suitable for the tuberculous patient. (See Appendix to a third edition of Dr. Walshe's work on Diseases of the Lungs; the late Sir James Clark's classic work On Climate; and Dr. Theodore Williams's Lettsomian Lectures in *Brit. Med. Journ.*, 1876). Dr. Williams's statistics show the benefit to be derived from life at sea. In cases

where destructive lung diseases is suspected, but in which actual lesion does not exist, a sea voyage to the Cape, or to Australia, or to New Zealand, round Cape Horn should be resorted to at once. The prevention of certain forms of pulmonary phthisis may be looked for in the unrestricted enjoyment of pure out-of-door air. Continuous indoor labor is to be avoided,' and measures taken to prevent bronchial catarrhs by sufficient warm clothing and the constant use of flannel next the skin in this country. The effects of hydrotherapeutic treatment and of muscular exercise at the mountain sanitoria of Switzerland, along with the prescribed use of wine, fruit, and nutritious diet, are of much importance to be considered. The purity of the air of mountains consists practically in the absence of all organic particles. The transparency of the air, which is dependent on its greater dryness, and the more powerful action of light, depending upon the same cause, aid materially the operation of its purity. The effect of residence in mountains on the dimensions of the chest is also worthy of careful consideration, and has been studied by M. Armieux, at Bareges, at a height of more than 3,000 feet. He ascertained that in the case of ninety-six soldiers sent up to Bareges there was, after four months' residence, a distinct increase in the measurement of the chest —a fact which has a very important bearing on cases of threatened phthisis in the young; and that a mountain climate is to be considered as favorable to the development of the thoracic cavity, and consequently as improving the respiration. (See also Dr. W. Marcet in Proceedings of R. S., Vol. XXVIII., p. 498). Mountain air may thus be useful in certain cases and in certain periods of phthisis. It acts by its purity, by its dryness and transparency, as well as by the diminution of atmospheric pressure. These principles have only, or nearly only, been applied in Switzerland; but mountain stations for similar cases might very well be selected in some parts of France. After all, neither barometer nor thermometer, neither hygrometer nor anemometer, can determine what is the suitable climate for such and such a phthisical patient. All depends on the nature of his constitution, and on the way in which the various meteorological conditions affect him, and on the local lesions in his lung (Drs. J. Macpherson and Gouraud in *London Medical Record*, July 15, 1876).

Pityriasis Versicolor (*see Tinea Versicolor*).

Plague.—*Definition.*—A specific malignant fever which has prevailed at different times and places epidemically, attended with bubo or swellings of the inguinal and other lymphatic glands; or occasionally with carbuncles, pustules, spots, petechiæ of various colors, distributed in different parts of the body; and severe manifestations of implication of the nervous, sanguineous and bilious systems.

Treatment.—It is to be regretted that recent experience has not in any degree advanced the successful treatment of the plague. In the beginning of the epidemic, when the morbid cause acts with a rapidity so great that some hours are sufficient to compromise the life of the patient, any treatment is powerless to arrest the course of the disease. When, however, the malignancy of the disease abates we may hope for the recovery of patients (Clot Bey). Looking, however, to the pathology of the disease, and regarding it as bearing some resemblance to malignant typhus fever, the principles of the general treatment of plague ought to be similar to those laid down in the account of that disease. We have no sufficient evidence to prove that plague may be carried beyond those geographical limits where it is epidemic. Quarantine establishments to prevent the transmission of such epidemic diseases are now not only unwarrantable, but they are vexatious interruptions to mercantile enterprise. It is now more than 154 years since any part of Western Europe has suffered from plague; but till a comparatively recent period, more or less of the disease had been habituate or frequent in the Levant, and though occasions have been very numerous when arrivals from the Levant in this country must have been more full of danger than those now represented, the experiments thus performed on the public health of England have in no case led to any injurious result. I am informed by a medical friend who visited Malta in 1861, that a curious instance of the wavering nature of opinion regarding the efficacy of quarantine was afforded during the last Bengazi plague. The Maltese—the most sensitive people formerly on the subject—absolutely declined to put any quarantine on arrivals from Bengazi, and trade went on as usual, until the Austrians intimated that, unless Malta put Bengazi in quarantine, Trieste would put Malta in quarantine; and the poor merchants were obliged to submit. There is little risk of plague being imported now because of the great sanitary improvements which have taken place; and it is to be hoped that as sani-

tary measures are developed the barbarism of quarantine will entirely disappear; except, perhaps, where the intelligence of the people does not go beyond that of the Russian Governor of Eupotoria, who requested that the allied armies of France and England might go into quarantine when they landed in the Crimea in 1854 ! (Kinglake.)

Pleurisy.—*Definition.*—Inflammation of the serous membrane that lines the cavity and covers the viscera of the thorax. It is characterized at its outset by febrile chills, followed by an acute sharp pain in some part of the chest, frequently called "a stitch in the side." It is usually confined to one spot about the lateral regions of the thorax. The acts of respiration are performed rapidly. They are shallow, irregular, and incomplete. A dry short cough supervenes, and the pulse is hard and quick. The natural serous secretion of the pleural sac is arrested in the first instance, but soon becomes increased in quantity and altered in quality, having a tendency to assume the corpuscular character. The effusion may rapidly increase, and may ultimately assume a sero-purulent character, the parietes of the corresponding side of the chest being dilated accordingly.

Treatment.—In acute pleurisy venesection can be dispensed with. It neither cuts short the malady nor prevents effusion. It may only be adopted in cases of severe dyspnœa, arising from collateral hyperæmia, if the compressed part of the lung is attended with signs of œdema. At the commencement of less severe cases the use of cold compresses, and of local blood-letting by leeches or cupping, may be repeated in the course of a day or two, until relief becomes permanent; but the local blood-letting is only to be had recourse to if the cold compresses do not relieve the pain and the dyspnœa within two or three hours. Large hot poultices of linseed with mustard should be always employed when local pain on inspiration is present of a "catching" or "stabbing" nature. If the pain and dyspnœa are not relieved within two or three hours, the method originally recommended by Dr. Frederick T. Roberts, in his "Handbook of Medicine" (page 508), of mechanically fixing the side affected, so as to prevent its movements as much as possible, ought to be at once adopted. "Strips of properly adherent plaster, spread on a firm material, are cut about four inches wide, and sufficiently long to extend round the side from mid-spine to mid-sternum, or a little beyond. These are laid over a variable extent of the chest, according to the severity

of the case, it being sometimes requisite to include the whole side—beginning below. The patient is directed to EX-*pire* deeply, and at this time a strip of plaster is fixed at mid-spine, and drawn tightly round the side in the direction of the ribs; then another strip is laid over this, but across the course of the ribs; the third follows the direction of the first, overlapping about half its width; the fourth that of the second, and so on in alternate directions. A strip may also be passed over the shoulder, and kept down by another fixed round the side across its ends." Tartar emetic subdues the inflammatory tendency. Its use must be abandoned as soon as the acute symptoms have passed away. Digitalis, rather than tartar-emetic, may be given in recent cases in the form of infusion. In the more latent cases one grain of the powder of the leaves may be combined with a grain of quinine. Blisters are not to be used until the acute stage is past. When pain has ceased for some days, and absorption of the fluid proceeds slowly, and the disease promises to become chronic, a succession of blisters may be of use, applied over the lateral region of the chest, but not over the seat of pain. Diuretics ought at the same time to be freely given. The compound tincture of iodine, in doses of twenty minims freely diluted, is a valuable medicine at this juncture; and so also is the liquor iodi of the "British Pharmacopœia" of 1867. After free evacuation of the bowels has been effected, calomel, to the extent of producing the slightest mercurialization, is the most beneficial line of treatment, to be adopted in certain cases only—namely, in otherwise healthy persons in whom the pleurisy is not the result of a constitutional disease. The more rapidly slight mercurialization can be produced the better. During the first six hours, small doses of calomel with opium (a grain and a half of the former, combined with a sixth of a grain of the latter, or more, if the pain continues acute) should be given every half hour, while mercurial ointment is rubbed into the skin of the affected side near the axilla every fourth hour (Walshe); or half grain or grain doses of opium, every three or four hours, in combination with one or two grains of calomel, and half a grain of digitalis, may be given, and the whole side may be covered with a piece of linen spread with mercurial ointment: over this is placed a poultice covered with oiled silk. The patient must be carefully watched, so that neither ptyalism nor narcotism is produced. The moment mercurial action has been established, the further admin-

administration of the mineral must cease. Opium and digitalis are to be continued after the use of calomel has been suspended; and with them may be given two grains of squills or of nitrate of potash, as a diuretic; or after twelve or more hours very small quantities of tartar emetic in solution may be given at night, combined with small doses of opium and ipecacuanha, to allay general irritation.

In the chronic stage of pleurisy there is a necessity for generous diet and tonic remedies, such as quinine, in aid of any diuretics and absorbents which may be employed. If the patient be kept too low after the stage of active inflammation has subsided, or be unduly depressed, it will not only be impossible to induce absorption, but there will be great danger of the fluid becoming sero-purulent. When a succession of blisters has failed in relieving the patient, iodurettted lotions, or iodurettted ointments, combined with the internal administration of cinchona with tincture of iodine, iodide of potassium, and small doses of bichloride of mercury, nitre, acetate of potash, squills, digitalis, and cantharides, have each in their turn effected the desired object (Fuller). The fluid has been gradually reabsorbed, and recovery has ensued by a combination of iodine remedies, taken internally, and applied externally—e. g., syrup of the iodide of iron (℥ ii.), with simple syrup (℥ ii.), and a teaspoonful taken every two hours, in conjunction with the external application of a weak solution of iodine (iodine, ℥ ss.; potass. iodidi, ℥ ii.; aq. distil., ℥ ii.) upon the affected side of the chest (Niemeyer). Other formulæ most useful in such cases are—(1.) A diuretic in the form of a pill, composed of digitalis, squills, and the mass of pill. hydrargyri, of each a grain and a half. Nitrate of potash (twenty grains), combined with tincture of the perchloride of iron (fifteen minims), three times a day, may at the same time be given (Fuller, Chambers). Professor W. T. Gairdner recommends as a diuretic the cream of tartar electuary, in which the cream of tartar is mixed in equal proportions with treacle, honey, marmalade, or syrup of ginger, and in some cases flavored with a few drops of peppermint oil. The dose is a teaspoonful, repeated as often as the stomach will bear it, or as the urgency of the case demands. Jaborandi, in the form of infusion, has recently been advocated in the treatment of chronic pleurisy with serous effusion. (2.) A lotion, to be applied over the chest by spongeopiline, or by lint covered with oiled silk, composed of—Bichloride of mercury, gr. iv.; tincture

of iodine (compound), ʒ iv. to ʒ vi.; glycerine, ℥ iii.; and distilled water, ℥ ivss. (3.) One or other of the following ointments may also be rubbed upon the skin, over the side of the chest—Bichloride of mercury, gr. iv. to vi.; iodine ointment, ʒ iv. to ʒ vi.; lard, or vaseline, ℥ iv. to ℥ vi.; or, bichloride of mercury, gr. iv. to v.; iodine of potassium, ʒ ii.; distilled water sufficient for solution; and lard, or vaseline, ℥ i.; Ft. Ung. Feeding the patient upon the driest possible diet, and withholding water as much as possible, has been successful in some cases (Schroth).

As a means of relieving the chest in chronic pleurisy and empyema, the operation of puncturing the chest and letting out the fluid—an operation to which the name of paracentesis has been given—is a useful one; and the practical question is as to the time when it should be performed. The condition of the patient's health and respiration, and the absorption or non-absorption of the effused fluid, are the aids to a decision for or against its performance. As long as the breathing is not seriously embarrassed, and the general health does not decline, so long are we justified in making full trial of our remedies. But as soon as extreme shortness and distress of breathing, or lividity and anxiety of the countenance, denotes serious interference with the functions of life, delay is no longer justifiable, and it becomes our duty at once to give our patient the chance which the operation affords. In the hands of the American physician, Dr. Bowditch, and Professor W. T. Gairdner, of Glasgow, and Dr. Budd, of London, this operation has been the means of saving many lives. Its effect is to relieve the mind as well as the lungs of the patient from great oppression. Although before the operation he may be quite weak, he is often able after it to get up and walk. Digestion becomes at once improved, and strength is rapidly regained. The cough, however, is apt to augment during the first few days; the pulse retains its quickness; friction-sounds occasionally become developed, and several months may elapse before the vesicular murmur becomes properly re-established in the lung. Generally, the operation of paracentesis thoracis in simple pleurisy is not to be performed unless the life of the patient is in jeopardy—that is, in cases "in which the effusion continues and increases, and the side, instead of shrinking, enlarges; the functions of the lung on that side are entirely abolished; nay, the use of the remaining lung is greatly interfered with by the pushing over of the mediastinum; and the patient is in

imminent danger of suffocation." In such cases the oppressed lung must be relieved by "letting the fluid out" (Sir Thomas Watson, Lectures, Fourth Edition, Vol. II., p. 128). "Life is plainly in jeopardy when the vital functions of the lungs or of the heart are greatly hindered; when symptoms present themselves of approaching death by apnœa or by syncope. If we discover no cause for those symptoms except the increasing pressure of liquid pent up in the pleura, we are warranted in ascribing them to such pressure, and bound to act upon that persuasion." Also, if death by asthenia appears inevitable, the patient losing ground from day to day, and when all other means of getting rid of the pent up fluid have failed, the patient should not be denied the chance which the operation affords. Also, "whenever the effused liquid consists of pus, it should be let out" (l. c., p. 130). The risks of allowing a localized empyema to remain are great (Wilks). With the arrangements of Dr. Bowditch's syringe we are enabled to remove fluid before the false membrane thickens over the compressed lung, and so makes it difficult to expand again. The trocar and small canula take the place of an exploring needle. Therefore, if the lungs are not bound down by adhesion, or prevented from expanding by the thickness of the false membrane which covers it, Bowditch's syringe and stopcocks enable the fluid, even when purulent, to be withdrawn without air being admitted. Mr. Lister's antiseptic method and precautions as to opening an abscess ought to be adopted. But when air has been admitted, and when the fluid within the cavity of the chest has become changed thereby—is purulent and perhaps fetid—the evacuation, under antiseptic precautions, of the contents by "drainage" seems the most efficient remedy.

In Pneumothorax.—Puncturing the chest walls may give temporary relief, by allowing the air to escape; but the operation ought only to be done in cases where the dyspnœa is urgent, and the displacement of the viscera such as demands that relief which the operation is calculated to give. Otherwise, the treatment of pneumothorax is best conducted by small doses of morphia—*i. e.*, stimulant doses—frequently repeated, combined or not with ether or alcohol, with a view to overcome collapse, relieve dyspnœa, and subdue pain. When reaction follows collapse, as indicated by heat of skin, strength and hardness of pulse, soreness and pain of the affected side, local blood-letting by leeches, with saline aperients, may be used if the strength of the patient warrants such

a line of treatment. Turpentine and poppy fomentations, followed by blisters, are also indicated if life is sufficiently prolonged after the primary inflammatory symptoms are subdued. The inhalation of small quantities of chloroform is useful. In other respects the treatment is similar to that already stated.

Pneumonia. — *Definition.* — Inflammation of the lungs, which, in its acute sthenic form, is often complicated by constitutional or specific diseases. It runs a definite course, expressed by severe febrile symptoms, which come on suddenly, attaining in a few hours a great intensity, but which may undergo a no less sudden abatement or improvement between the fifth and tenth day, in proportion to the severity of the disease and the textures implicated, while the local productive results of inflammation in the form of the lung-lesion are yet intense, but which are eventually removed. The natural course of pneumonia is materially modified by constitutional or specific diseases, especially if any organ, such as the kidney, the heart, or the liver, is involved ; or it may be modified by the secondary contamination of the blood by absorption of lung-exudation in the later stages of the disease, tending to inflammation of the other lung, to pleurisy, to pericarditis, or to blood-coagula in the cavities of the heart or great vessels

Treatment.—One of the most discordant topics in the Science of Medicine seems still to be with some—the treatment of pneumonia. At one time (about fifty years ago) large bleedings were the rule. But Laennec and Louis were early convinced that large bleedings were by no means successful, and that in some cases they were absolutely injurious. The some difference of opinion was held with respect to large doses of the tartrate of antimony. At the same time we have it in our power materially to modify the course and to shorten the duration of pneumonia by the judicious employment of blood-letting, leeches, tartar emetic, certain salines, and opium (Parkes). The correlation of the body-temperature the number of the pulse, and the respirations per minute, furnish the best guide as to the course to be pursued in the treatment of pneumonia. If the pneumonia is not intercurrent to some other disease, but happens idiopathically in a person otherwise healthy ; if the mean body-temperature remains below 104° Fahr., the pulse does not exceed 120 beats in the minute ; and if the respirations never exceed forty in

the same time, the case must be regarded as a typically favorable case, which will certainly begin to get well when the cycle of the pneumonic process is complete—*i. e.*, in from three, four, seven or eight, to twelve days without any special medicinal treatment; but with the careful management implied by good nursing, absolute rest in the horizontal position, and a strictly antiphlogistic diet. In such cases it is sufficient to keep the patient in bed, in a well ventilated room, whose temperature should be kept as near 60° Fahr. as possible, to relieve thoracic pains by leeches, or fomentations, linseed and mustard poultices; to relieve thirst by alkaline or acidulated drinks; and to give frequently repeated small quantities of nutritious fluid food in the form of milk, milk and eggs, oatmeal gruel, or even meat soups. The natural history of an uncomplicated pneumonia shows that it has a definite cyclical course; that if left to itself in a vigorous patient, uncomplicated by any other ailment, and if it be of the typical intensity as here indicated, it almost always ends in recovery. The expectant mode of treatment of the Vienna school confirms this view, as the statistics collected by Balfour, Magendie, Skoda, Niemeyer, Schmidt, and Legendre fully prove. In cases of average severity there is a decided tendency to amelioration of all the symptoms by the eighth day. The results obtained by the Homœopaths have also shown this to be the case. Unless warranted, by certain special indications, active interference has an unfavorable effect upon the course of pneumonia (Niemeyer); and when treated by blood-letting, as a rule, it more often terminates fatally than where no venesection has been practiced (Diett). Blood-letting is no specific. It does not cut short a pneumonia; and in epidemic pneumonia it is hardly possible to bleed the patient without rendering him worse. But much must be left to the discretion of the practitioner. That there are cases in which the patient can only be saved by general blood-letting, everybody must admit. The cases of Louis and of Dr. Alison of Edinburgh establish the propriety of bleeding early, if blood-letting is to be used at all. As a general rule, the earlier the inflammatory state is detected (if possible before the third day—Alison) the more likely will bleeding be followed by well-marked beneficial results, the disease will be sooner cured, and the convalescence more rapid and perfect. Blood-letting in pneumonia should only be had recourse to when the following special indications for it arise: —(1.) When the pneumonia attacks a vigorous and hitherto

healthy person, is of recent occurrence (not exceeding fifty or sixty hours after the rigor), the temperature being at or exceeding 105° Fahr., and the frequency of the pulse as much as 120 per minute. The object of such venesection is to reduce temperature, lessen the frequency of the pulse, and so lessen the danger from the violence of the fever. (2.) When collateral œdema in the portions of the lung unaffected by pneumonia is causing danger to life, the presence of the blood is reduced by bleeding, and further transudation of serum into the air-vesicles is prevented. When the frequency of respiration is due to the pneumonic process alone—not to fever or to pain—and as soon as a serous foamy expectoration appears, together with a respiration of more than forty or fifty breaths a minute at the commencement of pneumonia; and when the rattles in the chest do not cease for a time, after the patient has coughed as well as he can, copious blood-letting is indicated to reduce the mass of blood, and to moderate collateral pressure. (3). When there are symptoms of cerebral pressure indicated by stupor or transient paralysis.

Antimony, in the form of tartar emetic, is another remedy which has gone through several extremes of administration in the treatment of pneumonia. Rasori introduced the practice of giving it in large doses, and Laennec was so dissatisfied with his own results of bleeding that he adopted Rasori's method. Few, if any, now believe in the usefulness of such large doses of antimony; and such a use of tartar emetic has justly fallen into discredit. When antimony is cautiously administered as a sedative, or diaphoretic and expectorant, in doses of the eighth or twelfth of a grain, every two or three hours, and in doses of a sixth or a quarter of a grain, in the more sthenic attacks, when the patient is strong and plethoric, it is a valuable remedy. It may be combined with compound tincture of camphor, or dilute hydrocyanic acid. It is contra-indicated in gastric or gastro-enteric irritation. There are cases where the remedy produces severe depression and nausea—cases in which the stomach will retain no food, not even water when given alone. Under such circumstances the administration of alcohol in stimulant doses often repeated is called for, and may require to be combined with ammonia, chloric ether, and camphor. Alcohol is especially indicated by the occurrence of delirium (if vascular excitement does not exist); by a weak, rapid, or dicrotic pulse; by signs of collapse; by age and general debility of the patient;

or in cases of pneumonia secondary to those diseases which it frequently complicates.

A rational treatment of pneumonia is one which must secure to each case its own individuality and consideration. Bleeding, antimony, and blisters may be demanded in one case; quinine, opium, and wine in the next; a third may require but little interference beyond a well-regulated diet, moderate stimulants, and absolute rest. It is the proper combination of remedies, not a single agent or mode of practice, which must be sought for in its treatment (Lawson). The so-called "rational" or "restorative" mode of treatment is the one to be adopted in cases of sthenic pneumonia characterized by heat, above 104° Fahr., dryness of the skin, a full resistant pulse, over 120, rusty-colored expectoration, great oppression of the breathing, and to the extent of beyond forty respirations per minute, blood-letting, had recourse to at the beginning of the attack, in the stage of congestion before the fastigium of the pyrexia (not later than forty or fifty hours after the initial rigor), not only affords immediate relief to the breathing, but removes the extreme tension of the vascular system, and promotes secretion. The most suitable time is that during the evening exacerbation (Huss). These indications for blood-letting should be decidedly marked before it is undertaken; and the amount of blood to be lost varies in each case, according to the oppression of breathing, the type of the disorder, and the constitution of the patient; as well as to whether or not there is any prevalent epidemic tendency associated with the pneumonia. It is seldom necessary to draw more than from ten to sixteen ounces; and eight or ten ounces will usually suffice. After bleeding, the pain in many instances ceases, expectoration takes place more easily, and alters in character; the skin becomes moister, and evidence is afforded of the action of remedies which before proved inoperative (Fuller). But in many cases it is either unnecessary or inexpedient to let blood—inexpedient chiefly because of the constitution of the patient being shattered by excesses, constitutional disease, anxiety, and mental distress. Under such circumstances, it impairs the strength, leads to greater impoverishment of blood, arrests the actions on which the absorption of exudation-matter depends, and induces a tardy convalescence. Bleeding ought not to be employed after extensive consolidation of the lung has taken place.

The cases in which tartar emetic, in small doses (one-

eighth of a grain) fails to exercise a curative action are those in which hepatization proceeds with extreme rapidity; in which crepitation either does not exist at all, or is of very short duration, giving place after a few hours to intense tubular breathing; and those which are marked by extreme depression almost from the first. Salines and stimulants with opium, if necessary, are found to be the most efficient means of treatment in such cases. Of other proposed remedies, the following may be noticed, namely:—(1.) Aconite is only to be given at the very outset, or first stage of pneumonia, from miii. to mv. of the tincture of B. Ph. every four hours (Wilks); or from mii. to miii. every three hours at the outset of the congestive stage (Keith, *Edin. Med. Journ.*, Oct., 1868, p. 905.) Half a drop to one drop of the tincture in a teaspoonful of water every ten or fifteen minutes for two hours, and afterwards to be continued every hour, has been useful in febrile catarrh and catarrhal croup, and may be useful in some of the phases of pneumonia, especially to subdue increased action of the heart and circulation, and to reduce the abnormally high temperature. Care must be taken that the remedy is not combined with alkalies (Ringer). (2.) Carbonate of ammonia.—A combination of ammonia and chloroform (where antimony in small doses is not indicated) may be taken every three or four hours. Four grains of carbonate of ammonia, twenty minims of the spirits of chloroform, in five drachms of camphor water, combine the beneficial properties of both stimulants (Waters). It is indicated when the symptoms generally resemble those of delirium tremens, when the pulse is small and weak and quick, or if delirium is present. (3.) Digitalis has of late years been employed by Oppolzer, Traube, Schneider, Niemeyer, and others, as one of the best agents for the relief of the febrile symptoms. It lowers the temperature and diminishes the frequency of the pulse, without exercising so weakening and depressing an effect upon the system as bleeding. A pulse of 100 to 120 in frequency is an indication for its employment—a less frequent pulse does not require it. It is usual to give it in the form of infusion, combined with the neutral salts of nitrate of potass and soda. Digitalis may be advantageously combined with ergot, in the proportion of four drachms of the fluid extract of ergot to one drachm of digitalis, with six grains of the acetate of lead in two ounces of cinnamon water, of which a tablespoonful is to be given every two hours till the blood disappears from the sputa (Wells,

New York Med. Record, Vol. XV., No. 17). (4.) Opium is of great service. It may relieve the pain of the side, and diminish the distressing cough. It is also of use in warding off delirium, combined with stimulants and nourishment. It ought to be given when there is want of sleep, restlessness, and staring of the eyes, with slight tremors of the hands. It may be used hypodermically. (5.) Hydrochlorate of ammonia is of use in congestion of the lungs, in the advanced stages of pneumonia, and in the cough of old age. One drachm is to be combined with one drachm of extract of liquorice; two drachms of spirit of sulphuric ether, and four ounces of water, of which a tablespoonful is to be given for a dose every two or three hours (Waring). Or it may be given in one or two grain doses every hour or two, mixed with equal parts of glycerine and water. (6.) Iodide of potassium, in the advanced stages of pneumonia, appears to promote the absorption of effusions and indurations. In severe cases of broncho-pneumonia, combined with tincture of hyoscyamus and ammonia it may reduce the frequency of the respiration in a marked degree. (7.) Quinine is of use chiefly in the advanced stages when the patient is old, the constitution debilitated, and typhoid symptoms prevail. It is best given in combination with sulphuric acid, in doses of five grains every third hour. The pulse ought to become slower and steadier under its use, and the respiration freer. It should be given in doses of two grains every two hours, or in two or three ten grain doses within a few hours, whenever danger threatens from excessive elevation of the temperature of the body. (8.) Alkalies.—Bicarbonate of potash, largely diluted in mucilaginous liquids, five grains up to thirty grains in each dose,—four, six, or even eight doses being given in the twenty-four hours to the extent of two to three drachms of the salt per day), alters the character of the expectoration by the second or third day of its use. The viscid sputa become resolved; the fine bubbles become coarse and large; the red color of the expectoration disappears; its tenacity of adhesion lessens, so that it is brought up easily, and the cough becomes moist, soft, and expulsive. Thus the alkali acts as a sedative, allaying the cough and abating the congestive state on which it depends. The white pasty fur over the tongue dissolves away in an increased flow of saliva. The urine becomes alkaline, and the physical signs of pneumonia become resolved. It has also a marked action as a nerve sedative. A drachm dose in

water produces an agreeable, tingling, numbing sensation, in the lips, cheeks, and other parts, extending gradually to the lower limbs. It is especially indicated where the pneumonia is associated with rheumatism. "Flying blisters," applied for four or six hours, so as to redden the skin (not for suppuration), is a valuable auxiliary. Suppuration from blistering is to be avoided as exhaustive and prejudicial (Dr. John Popham, *Brit. Med. Journ.*, Dec. 28, 1867, p. 586). (9.) Stimulants.—The treatment by repeated alcoholic stimulants alone is but the opposite extreme of practice to excessive blood-letting. It has now found its level and appropriate place as a valuable aid to other remedies, especially in patients whose constitutions are depressed under the influence of life imposed upon them by the "great town system." When pneumonia tends to death by exhaustion, as the disease advances; when exudation has been excessive, the fever prolonged, or the constitution debilitated before the attack, such a state of complete adynamia requires the use of stimulants, in the form of large doses of camphor, mint, benzoic acid, alcoholic drinks; and in addition, concentrated soups and milk are called for in small quantities, given often. In old persons, stimulants, with generous diet, preparations of quinine and iron, are indicated from the very commencement. Alcoholic stimulants are rarely required in young persons, or in previously healthy adults.

Some local applications require special notice, namely :—

(1.) *Cold Applications.*—The chest of the patient (the affected side in particular) is to be covered with cloths that have been dipped in cold water and well wrung out. Compresses thus made must be repeated every five minutes. After a few hours the patients experience a material relief. The pain, dyspnœa, and frequency of the pulse are reduced, and the body-temperature may go down an entire degree (Niemeyer, Smoler). The treatment is not merely palliative, but tends to shorten the duration of the illness. Few cases delay to improve beyond the seventh day, many improve on the fifth, and a very large number as early as the third day. The remedy is justly held in repute for meningitis and peritonitis, and hence it may fairly claim to have a similar good effect in pneumonia.

(2) *Linseed Meal Poultices.*—On the other hand, heat combined with moisture in this form, made as light and soft as possible, and sufficiently large as thoroughly to inclose the affected side, and changed as often as it gets unpleasant, not

only affords present relief, but exercises a favorable influence on the course of the disease. The skin may be at the same time stimulated by mustard, or terebinthine applications, added to the poultice.

(3.) *Turpentine.*—Hot turpentine fomentations may be applied over the affected side also with advantage.

(4.) In children it is sometimes of importance to be able to induce cough and expectoration. This can be facilitated by using a spray of a weak warm solution of carbonate of soda, to which a little glycerine of carbolic acid is added. It is a valuable resource in promoting the expulsion of the plugs of tough mucus which tend to accumulate in the bronchial tubes of children with bronchopneumonia (Dr. Burney Yeo, *Brit. Med. Journ.*, Dec. 7, 1878).

Time is an important element in the cure. As particular phases in the course of the pneumonic cycle call for special treatment, so much more successful will the management of the case be if the indications for interference are understood and acted upon. The natural course of the disease is to go on rapidly to a spontaneous favorable termination, by a process of resolution through which the solidified lung-tissue regains its natural and healthy state, independently of remedies. Those remedies that have been specially noticed may each be of service in safely and surely controlling the circulation when the indications for treatment are short of requiring the agency of blood-letting. Their effects must be watched so that they do not lower the vital powers nor disturb the digestive functions. The indications for nourishment, properly adjusted to the circumstances of each case, and each stage of the case, are of paramount importance from the first; and the happy issue of a case of pneumonia depends quite as much upon early and properly feeding the patient as a case of typhus or enteric fever does. A milk diet should be given from the commencement, to be followed by beef-tea and meat-stock soups as the disease advances and the pulse softens. Stimulants cannot be regarded as the equivalent of food (Clymer).

Podagra—*See Gout.*

Pompholox—*See Pemphigus.*

Porrigo Decalvans—*See Tinea Decalvans.*

Porrigo Favosa—*See Tinea Favosa.*

Psoriasis.—*Definition*—An eruption characterized by the development of irregularly formed patches of a dusky red or coppery hue, slightly raised above the level of the skin, and covered with thin, dry, white scales.

Treatment.—Preparations of arsenic are found to be of great service in this squamous form of eczematous inflammation. A form of arsenical remedy, known as the Asiatic pill, is recommended by Cazenave. Its composition is as follows :

℞ Arsenici Protoxidi, gr. i.; Pip. Nig., gr. xii.; Pulv. Acac., gr. ii.; Aq. Distill., q. s.—Divide in pil. xii. vel. xvi. One pill to be taken once, twice, or thrice daily after meals.

It is of the greatest importance that the meals and the diet should be regulated. Small doses of pilulæ hydrargyri, or of pilulæ calomelanos composita, or hydrargyra c. creta, may be given at bedtime for a few days, followed each morning by a drachm of magnesia, given in combination with a teaspoonful of lemon juice. The vascular excitement of the stomach is best subdued by dilute hydrocyanic acid, in the following formula (A. T. Thomson) :—

℞ Potassæ Carbonatis, ʒ ss.; Succi Limonis Recentis, f ʒ iv.; Acid Hydrocyanici Diluti, miv.; Vini Sem. Colchici, mxv.; Aquæ Distillatæ, f ℥ vi.; misce. Fiat haustus 4ta. quaque horæ sumendus.

The tone of the stomach is to be restored by small doses of bicarbonate of potassa, with from twelve to fifteen minims of the tincture of henbane, in a fluid ounce and a half of the infusion of cinchona. The eruption and itching disappear as the mucous membrane of the stomach and bowels return to a healthy state. The diet should be absolutely free from stimulants ; and tepid baths, at a temperature of 96° Fahr., used every morning for half an hour, are most serviceable. The bowels should be regularly relieved by such mild ingredients as are contained in the following formula for pills :

℞ Pilulæ Hydrargyri, gr. vi.; Pulveris Ipecacuanhæ, gr. vi.; Extracti Colocynthidis Comp., gr. xii.; Ext. Hyoscyami, gr. xviii.; misce. Fiat pilulæ duodecem. Sum. ij. h. s. quotidie (A. T. Thomson).

Glycerine and emollient lotions are useful local applications. I have found the itchiness greatly relieved by the following lotion of bitter almonds, rubbed nights and morning over the parts affected :

℞ Amygdal. Amar. Numero, xx. vel. xxx.; Aquæ Rosæ, ℥ vii. Contunde et tere simul, dein cola, et adde Hyd. corrosiv. Sublim., gr. xii.; Ammoniæ Hydrochloratis, gr. xii.;

Spt. Vini Rect., ℥ i.; or, Dilute hydrocyanic acid may be used to the extent of two drachms to the eight ounces, omitting the corrosive sublimate; or let borax replace the hydrocyanic acid, and omit the spirits of wine.

When the lotion has dried off, oxide of zinc ointment or glycerine starch ought to be applied to the parts all night.

Puerperal Convulsions—*See Convulsions, Puerperal.*

Puerperal Fever.—*Definition.*—"A continued fever, communicable by contagion, occurring in connection with childbirth, and often associated with extensive local lesions, especially of the uterine system.

Treatment.—Having regard to the varied sources whence puerperal fever may take its origin, prophylactic treatment ought to be the first consideration; and especially the burning question as to what ought to be the conduct of the medical practitioner in the face of perils of this kind (Priestley). Preventive measures are of vital importance, for such measures have been proven sufficient to arrest the development of the disease.

Dr. W. O. Priestley concludes his admirable address as follows:—

"The method, therefore, to be pursued for guarding lying-in women from noxious influences, consists of all those measures which prevent the formation of poisonous materials in her own system, and which secure her isolation from all contagion from without. In following out the first indication, it is necessary to provide, as much as may be practicable, for a woman encountering her confinement in the best possible condition of health, by impressing upon her the necessity of obedience to natural laws during her pregnancy. If complications occur during pregnancy, they must be combated as the circumstances will permit. Dr. Barnes has informed us that albuminuria at the end of pregnancy is extremely apt to go into puerperal fever. On these cases, therefore, a sedulous watch must be kept, the bowels must be carefully attended to, and other suitable treatment adopted. The process of parturition should be conducted with the view to the genital canal of the woman being exposed as little as may be possible to the effects of irritation, continued pressure, and laceration. After the birth of the child, a full and perfect contraction of the uterus should be secured, by seeing that the organ is not emptied too suddenly, and that the hand follows the fundus down from above as its contents are expelled. Subsequently to de-

livery, the various known methods should be practised which promote the contraction of the walls of the womb and the diminution of the uterine cavity; and any clots forming, should be removed from time to time during the hour after removal of the placenta. It is superfluous to say that the placenta should be extracted in its entirety when possible; and great care should be taken not to leave any detached portions adherent to the uterine walls. The same precautions should be observed, when practicable, in cases of abortion. If any considerable laceration of the perinæum have taken place, the edges of the wound should immediately be united by sutures, not only for the purpose of restoring the perinæum, but also to prevent contamination of the wound by putrid discharges. In the case of other wounds in the vagina or cervix uteri, especial care should be taken to keep them clean by repeated injection, and to leave as small a raw surface exposed as may be practicable. In all cases where the lochia are in the least degree offensive, the vagina should be well injected with Condy's fluid and water, or other innocuous disinfectant, twice in twenty-four hours, or oftener if necessary; and the injection may be carried into the uterine cavity, if it be much distended, and there is a suspicion that it harbors fœtid contents. The injection of the wound-cavity, however, should be conducted slowly, carefully, and without force. These uterine injections were practised long ago by William Harvey, and there is concurrent testimony in this and other countries of their marked utility in abating the symptoms, even when puerperal fever has apparently set in. Next in importance is to take care that there is no fæcal accumulation in the bowels, and to recollect that the existence of previous diarrhœa may be the indication that retained masses are lying in the intestines and producing irritation there. It must be within the experience of many how acute febrile symptoms, accompanied, it may be, by delirium or incipient mania, have passed away with a proper evacuation of the bowels. I may put it, in short, that, to promote recovery after parturition, every direct or reflex source of irritation should be removed, pure air and water ensured, absolute cleanliness observed; and perfect quietude, mental and physical, should be enjoined. Nursing the child should also be recommended when the mother's condition permits, as puerperal ailments have been observed more frequent in women who have not suckled their children. To secure the isolation of a lying-in

woman from noxious influences which may be communicated to her from without may be difficult, and in some cases perhaps impossible; but as Mr. Callender has informed us how surgeons have learned to banish, for all practical purposes, those affections which may be termed septicæmic from surgical wards of hospitals, so I cannot help thinking that the accoucheur will in time succeed in preventing the like affections in puerperal women, so far, at least, as the heterogenetic cases are concerned. We are all agreed as to the absolute necessity of preventing, directly or indirectly, any communication between cases of erysipelas and puerperal patients. We are agreed also as to the necessity of the midwifery practitioner avoiding all *post-mortem* examinations. His hands should avoid all contact with specific poisons or septic materials; and if perchance his fingers have touched anything suspicious, he should at once carefully and thoroughly disinfect them. The necropsies which seem most baneful are of those bodies which have recently died of erysipelas, peritonitis, zymotic disease, or any other inflammatory and febrile affections; and in such instances the accoucheur should not even be present in the room when the dissection is made, as, though he decline to touch, yet his person and clothes may become infected by the poison. There may possibly be a doubt whether one who dissects bodies altered by decomposition or antiseptic injections, as they are commonly found in the dissecting-room of medical schools, is so liable to contaminate a puerperal patient as he who makes a necropsy soon after a death. Semmelweiss, however, believed that animal matter in a state of putrefaction would cause puerperal fever, and immediately lessened the mortality, during the fearful epidemic of puerperal fever which raged in the Vienna hospital in 1846 and 1847, by obliging all dissecting students to wash their hands in chlorine or chloride of lime before making vaginal examinations. Impressed by Semmelweiss's views and opinions, I endeavored, during my occupancy of the Chair of Obstetric Medicine at King's College, to prevent students frequenting the dissecting-room and *post-mortem* theatre from attending midwifery cases, and the result was a very small mortality in the outdoor maternity charity. This care about absolute cleanliness of the hands in attending labors should extend even to occasions when a medical man has had digitally to examine patients suffering from offensive discharges either proceeding from the surface or from the interior of the

body. We have heard in this discussion that the discharges from cancer may produce fever in a lying-in woman; and this is probably true of other putrescent discharges. I have had grave anxiety, extending over some weeks, about a patient after her delivery; because I had gone straight from an instrumental case where labor had been so protracted that febrile symptoms had set in, and the passages had become inflamed, so as to pour out an irritating muco-purulent discharge. When a medical man has a bad case of puerperal fever in his own practice, or is required to see one in consultation, he should certainly not go direct to another midwifery patient without first changing his clothes, besides careful ablution of his hands; and he will be all the safer in his ministrations if he adopt some of those precautions mentioned by Dr. Swayne and others, such as using a Turkish bath, or the more radical measures for disinfection recommended by Dr. Wynn Williams. [No method, however, has been pointed out, or even alluded to, in the course of the discussion by which the septic poison could be got rid of should it have attached itself in any way to the body or dress of the accoucheur or nurse. We have more than one substance—one in particular—that will not tolerate the presence of putrid animal matter or septic poison: this drug is iodine, which, as soon as it is brought in contact with septic matter, is converted into two harmless substances—acid and carbon. Let any one who has been in attendance on any case, whether a parturient female or any other, where there is any putrid emanation, wash his hands in water into which he has poured tincture of iodine, and I will answer for it he has no septic matter under his finger-nails. Again, if he fancy that his clothes, hair, and skin are saturated with it, let him go into the water-closet (I mention that as the smallest room in the house), place a few scales of iodine on a plate and put a spirit-lamp under it, and he will soon find himself surrounded by a violet vapor, which will fall upon him in a shower of minute scales, from which he has only to protect his eyes. If he then carry with him any of the puerperal poison, my whole theory of the disease must be wrong. One thing I can assert, that in my own practice I have never had a case of fatal puerperal septicæmia since I have used iodine as an antiseptic, now more than twenty years ago. Iodine is equally efficacious in warding off septicæmia in other surgical diseases. I have injected solutions of septic poison under the skin of guinea-pigs, and pro-

duced death by septicæmia. I have also injected some of the same solutions, into which I had dropped a few drops of the tincture of iodine, without producing any ill effects. It is needless to observe that the prevention and the cure of this disease go hand in hand together. Should any septic poison be present in the puerperal woman, wash her out again and again with solution of iodine until the solution comes back the same color as it was thrown up. The temperature of the patient will probably be 103° or 104°, and it will go down in a very short time to 98°. This I have witnessed since the present discussion began. (Dr. Wynn Williams.)]

"Many chemical substances have been recommended to be added to water for purifying the hands; iodine, chlorine and its compounds, sulphurous acid, cyanide of potassium, carbolic acid, and the permanganates. It matters not which agent is employed, so long as it is used carefully and efficiently; and if it be necessary to disinfect clothing, this is readily done by exposing it in an oven to a high temperature, for which many upholsterers have a suitable arrangement. With all deference to Dr. Matthews Duncan, I have no doubt that every medical practitioner who earnestly desires to promote the welfare of his patients and to keep himself blameless, should at once abstain from attending fresh cases of labor when one or more of those recently delivered by him have died with acute febrile symptoms, or are still so ill as to require his constant visits. When, indeed, there is the remotest suspicion that he may convey the poison in his own person, he should not incur the risk of disseminating it. How long he ought to absent himself from midwifery practice, is yet a moot point. Dr. Swayne thinks a medical man should seclude himself for a week only; others think a month hardly sufficient. The remarkable experience of Dr. Huntly, of Yarrow-on-Tyne (*Brit. Med. Journ.*, Feb. 27, 1875, p. 271), led him to believe that he actually generated poison in his own body, as the result of some faulty process, which he communicated to his patients. Taking all the circumstances into consideration, I am disposed to recommend a week's seclusion after regular attendance has ceased on a single puerperal fever case. When a series of cases have occurred in the practice of any one medical man, he should absent himself from midwifery practice for a month at least. During either the short or long interval of seclusion, the means for disinfection should be fully carried out.

"Finally, I have to say a word or two as to the propriety of attending patients suffering from scarlet fever or other zymotic disease, and lying-in-women at the same time. After what has been said in this debate, I cannot expect the same accord of opinion as on other parts of the ground I have gone over; but I would earnestly beg those who have as yet had so favorable an experience, when attending the two sets of patients conjointly, to ponder well what has been said by others on the reverse side of the question. It cannot be expected that men in general practice, who may be in charge of a scarlet fever or small-pox patient, shall at once relinquish all midwifery practice for the time being, because zymotic diseases are so prevalent that this would practically preclude their attending confinements altogether, or make their attendance on midwifery patients so irregular as to be unreliable. Nevertheless, in view of the dangers which have been indicated by various authorities, albeit their experience may seem to point to different conclusions, they are bound to exercise vigilance, lest perchance they slip into a pitfall unsuspected by them. In seeing an ordinary case of illness, a medical man rarely stays sufficiently long in the sick room to concentrate any considerable dose of contagium about him, and the after-exposure to fresh air in passing from house to house no doubt usefully dissipates any smaller quantity. I would suggest, however, to those treating infectious cases, and liable at the same time to be summoned to cases of midwifery, or who may be in attendance on puerperal women, that they should not stay long in the sick chamber; not undertake the duties of nurses, as Dr. Duncan puts it; that they should see puerperal patients before seeing infectious cases, and never go from the infectious cases direct to the lying-in room, without changing clothes and the most careful ablutions. Some doctors change their clothes and wash with a disinfectant whenever they have seen infectious cases. Whatever either will, or may, conduce to the wellbeing of patients, will, I am sure, not be regarded as either too irksome or troublesome by any member of our profession" (*Brit. Med. Journ.*, Jan. 8, 1876).

If scarlet fever can be prevented, the number of puerperal fever cases would be diminished one-half (Hicks); and every possible step ought to be taken to remove the pregnant female alike from the influence of scarlet fever and from erysipelas. Dr. Hicks observes, also, "with regard to the medical attendant, although I have found some fully

aware of the risk of carrying scarlet fever and erysipelas to the woman in labor, yet I have met with not a few who either have not taken care, or have not been fully alive to the danger in which they are placing their patients." He considers it well to have three suits of clothes in use when attending such cases, keeping those out of use before a very warm fire, or hung out in the open air; the hands to be frequently washed and the nails short; and a good walk in the air should be taken before going to any other patient. Where there are partners, it is advisable for one to attend contagious cases, and leaving the other to manage the midwifery. With regard to the nurse, the tendency of women's dress to retain the fomites of contagion must suggest their frequent purification by disinfectants, and the use of material capable of being boiled in the process of washing, and of otherwise being subjected to the action of disinfectants. With regard to the prevalance of the disease in hospitals, the wards ought to be closed entirely against the admission of patients, at regular intervals, during which the process of purification should go on. The ward to be purified should then be filled with chlorine gas, in a very condensed form, for forty-eight hours at least; the windows, doors and fireplaces being kept shut. The floors and woodwork should be covered with chloride of lime, mixed with water, to the consistence of cream. The woodwork should then be painted, and the walls and ceilings washed with fresh lime; the blankets and sheets should also be washed and heated in a stove to a temperature of 120° to 130° Fahr. The hospital beds should be stuffed with straw; and as soon as the case is concluded, the straw ought to be burned, and the covering of the bed washed and heated like the blankets and sheets (Collins's "Midwifery," 388). Patients threatened with puerperal fever ought to be isolated.

With regard to medical treatment, pure air, nutriment, and stimulants are the agents best able to obviate the great depression which marks the commencement of puerperal fever. Quinine in large doses has been found useful after the bowels have been fully evacuated. It ought to be given till the physiological action of the drug is manifest, from the deafness and vertigo it produces. A form of quinine is now made soluble in warm water, which may be injected hypodermically. Opium is of great value. It has been given, to a large amount in the twenty-four hours, by Drs. Graves, Stokes, and others, since its great value became known. It

must be given till incipient narcotism is produced; and the best evidence of its good effects is seen when the respirations become sensibly diminished from the great frequency they attain in puerperal fever. If they can be reduced to fourteen or to twelve, with a pulse below 100, a subsidence of tenderness, and of tympanitis, the amount of opium may be gradually lessened and finally discontinued (Clark). Warburg's tincture (suggested by Professor W. C. Maclean), has been found successful by Dr. Playfair in the treatment of puerperal fever.

Purpura.—*Definition.*—A disease characterized by purple spots, patches, or merely points of effused blood, which are not effaced by pressure. They are usually met with on the skin alone; but they may appear simultaneously on the mucous membrane, when they are sometimes accompanied with more or less hemorrhage.

Treatment.—To treat this disease with success, it is necessary to ascertain the circumstances under which it becomes developed in each particular case. Its treatment may be comprised in the following measures:—The bowels ought invariably, and without exception, to be first thoroughly and effectually evacuated by means of senna, aloetics, or calomel and jalap. Oil of turpentine administered in moderate and repeated doses, has also been recommended. Dr. Hardy, of Dublin, recommends the tincture of larch bark. He has long used it as a styptic and carminative tonic; and it is "one of the most elegant forms of prescribing a terebinthinate" (Moore). Fifteen drop doses of the tincture may be administered every hour or eight or ten drops three times a day, afterwards increasing the dose according to the age of the patient and the necessities of the case. In young subjects otherwise robust, when the disease has appeared after violent exercise or excess, blood may be drawn from the arm, as practised by Dr. Parry of Bath. Under such circumstances also the young patient should abstain from animal food in every form, and should subsist on boiled rice with whey, or the light subacid fruits, as grapes, oranges, strawberries. gooseberries, baked apples, and the like. His drink may consist of tamarind-water, or water acidulated with sulphuric acid. Under this plan most cases of the disease in the young will be speedily and readily brought to a favorable termination. If symptoms of local uneasiness continue after the urgent phenomena have disappeared, leeches should be applied in the neighborhood of the part; and it will be proper to continue the periodical and regular evacuation of the ali-

mentary canal. When the spots have disappeared and the hæmorrhage has ceased, the constitution recruits rapidly under the gradual but cautious use of light soups and fresh fruits and vegetables (Craigie).

Pyæmia.—*Definition.*—A febrile affection associated with a morbid state of the system generally, the invasion being marked by frequently repeated severe rigors alternating with profuse sweatings, and usually sequent on some inflammatory and infective condition of wounds, suppurative inflammation of bone, the puerperal state, or surgical operations, which results in the formation of secondary lesions in the internal visceral organs (most frequently in the lungs, the liver, kidneys, spleen, and brain), and also in the joints and connective tissue. Sometimes, but not necessarily, it is associated with phlebitis or embolism. The blood becomes poisoned, and contains an excess of white corpuscles and of fibrine.

Treatment.—The aim should be to prevent pyæmia by dressing wounds and injuries by Lister's antiseptic methods. Whenever the antiseptic treatment of Lister is properly carried out there is complete absence of pyæmia. The indications are—(1.) To remove all those conditions which favor the degeneration, metamorphosis, or putrefaction of blood-clots or tissue in connection with wounds; (2.) To subdue the force of the circulating current, so as to prevent excitement during the long and slow metamorphosis of a clot when it has formed; (3.) To sustain the strength and allay the nervous irritability. Wine, brandy, rum, milk, strong animal soups, and nourishing diet, should be freely given from time to time, in small quantities. Opium should be given freely. Exposure of the patients to currents of fresh air—treatment in the open air, in fact—has been shown by Sir James Paget to be the most promising of success.

The use of disinfectants, and attention to ventilation, give support to the belief that the poison is one generated among cases of accumulated severe wounds and open sores. The patient ought to be isolated. Condy's fluid, carbolic acid wash, and chloralum, are each useful disinfectants. Preparations of iron are the most suitable tonics.

Pyrosis.—*Definition.*—Paroxysms of pain at the cardiac or œsophageal region of the stomach, occurring in paroxysms which do not cease till the patient vomits up a limpid colorless fluid, like water, cold and insipid to the patient's taste, but which sometimes gives an acid and sometimes an alkaline reaction.

Treatment consists in saline remedies, such as a drachm of the sulphate of magnesia, with fifteen minims of the tinct. hyoscyami, three times a day. Many other medicines have been recommended, as the tinct. kino, and compound kino powder, and mixtures of bismuth, especially Seller's. The compound tincture of benzoin, to the extent of one fluid drachm with mucilage, is most efficacious. (Baillie, Symonds). Sulphurous acid, in doses mxxx, to one fluid drachm, thrice daily, and shortly before meals, is advocated by Dr. Lawson (*Practitioner*, Sept. 1868). It is especially useful where sarcine ventriculi are present in the fluid evacuated. The diet should consist of animal food, and be otherwise nourishing. Oatmeal and brown bread must be avoided.

Quinsy.—*Definition.*—Acute inflammation of the tonsils, which may or may not lead to suppuration.

Treatment must depend entirely on the stage at which the disease comes under notice. In the early period resolution may almost invariably be brought about by the administration of guaiacum, in the form of lozenges. Dr. Mackenzie prescribes a lozenge containing three grains of the extract of guaiacum mixed with black currant paste, every two or three hours. But I have found the drug most beneficially prescribed in the following formula:

℞. Magnes. Sulph., ʒ vi.; solve in aquæ ℥ viii.; adde Pulv. Guaiaci ʒ iss.; Pulv. Tragacanth. Co., ℈ ii.; misce bene. One-sixth part of this mixture may be given every four hours till the bowels are freely moved.

Minim doses of aconite tincture every hour will maintain a regular and steady action in subduing the inflammation. In addition, ice sucked constantly, and iced drinks, are most grateful to the patient; while, if ice cannot be obtained, cold thick gruel frequently affords relief. In other cases, however, greater relief is experienced by holding hot water in the mouth, and by the inhalation of hot steam, combined with sedatives—such as benzoin or conium. A mixture of mucilage or gruel, containing nitrate of potash or borate of soda, and a small quantity of syrup of poppy, Batley's solution of opium, or prussic acid, should be frequently but slowly swallowed in small quantities, in tea or tablespoonfuls; the amount of narcotic ingredient being carefully regulated, so that a definite quantity is consumed in a given time. Externally, a mustard poultice should be first applied, and afterwards linseed poultices. The latter may be constantly repeated until the attack subsides; spongiopiline may answer

better than the linseed poultices, and is more cleanly. If suppuration has commenced before the practitioner sees the case, great relief will be afforded by puncturing the abscess with a guarded knife; the incision should always be made towards the median line. After the abscess has been relieved, the recovery of the patient is usually very rapid; but the prostration is sometimes considerable, so that nourishment and stimulants are required in abundance. It has been already remarked that a patient who has once suffered from quinsy is likely to suffer again; and the question naturally arises as to what preventive treatment should be adopted? In those cases in which there is any chronic enlargement of the tonsils, excision should be performed; but in some cases the glands, though extensively diseased, do not remain enlarged when the acute inflammation has passed away. Under these circumstances the tonsil may be amputated during the attack of quinsy. This plan of treatment is commonly adopted in Germany on its own merits, without any question as to the recurrence of the inflammation.

Rachitis—*See Rickets.*

Relapsing Fever.—*Definition.*—A continued fever, having a very abrupt invasion and short duration, characterized by an abrupt relapse occurring after an interval of apparent health of about a week. There is no eruption on the skin, nor any specific lesion associated with this fever, which is marked by rigors, chilliness, severe headache, vomiting, and often jaundice; a white moist tongue, epigastric tenderness, confined bowels, enlarged liver and spleen, high-colored urine, a frequent, full, and often bounding pulse, pains in the back and limbs, restlessness, and occasionally delirium. These symptoms abruptly terminate by an exceedingly copious perspiration between the fifth and the eighth day; and after a complete apyretic interval (during which the patient may be so well as to get up and walk about), an abrupt relapse supervenes on the fourteenth day, counting from the first commencement of the fever. The relapse runs a similar course to that of the primary paroxysm, and terminates between the third and the eighth day. In some cases a second, third, fourth, and even fifth relapse may occur. Death is apt to happen from sudden syncope, especially after the excessive perspiration; or from suppression of urine and coma.

Treatment.—All physicians agree that in the primary attack little medicine is required after opening the bowels by

castor-oil; or by five grains of the compound colocynth mass; or by two grains of blue-pill, and three grains of extract of hyoscyamus given at night, and followed in the morning by two drachms of the sulphate of magnesia in compound infusion of roses (Murchison). The symptoms are not readily under the control of remedies; the vomiting is often especially persistent. Five grains of calomel, with one grain of opium, has been found more efficient in subduing the severity of this symptom than counter-irritation or effervescing draughts. The violence of the headache in well-fed, or otherwise healthy patients, is best subdued by leeches or cupping; and in the poor, weakly and ill-fed, by blisters to the nape of the neck, or by dry cupping there. Till the crisis comes, the symptoms may be mitigated, but not altogether relieved, and cases of ordinary severity are better left to nature without interference on the part of the physician. Active purging is to be avoided; and the action of the kidneys is to be kept up by the frequent use of small doses of nitre (Ross, Henderson, Cormack, Wardell, Murchison). "By keeping up the action of the kidneys from the first" we may "prevent the occurrence of uræmic intoxication, which is one of the main causes of death in uncomplicated cases." With this end in view nitre is to be given as follows:—From one to two drachms of nitre are to be dissolved in two pints of barley-water, acidulated with a drachm of dilute nitric acid, and sweetened with a little syrup. This quantity is to be used up during the twenty-four hours. Acetate of potash and nitric ether may be used for the same purpose; but the nitre has the additional advantage of keeping open the bowels (Murchison). Contamination of the blood with urinary products is the great danger in cases of relapsing fever; and therefore particular attention must be paid to the state of the urine, especially towards the period of the first crisis. When the daily amount is much reduced, or if entire suppression should ensue, and particularly if stupor, confusion of thought, or drowsiness should supervene, the bowels are to be freely moved by compound jalap powder, or by a turpentine enema. Determination to the skin should be promoted by the hot-air bath; and saline diuretics may be given every two or three hours. No means hitherto discovered will prevent the occurrence of the relapse. The surface of the body should be frequently sponged over with cold or tepid water. Stimulants are not usually necessary, but they may be required in the stage of languor or exhaus-

tion ensuing on the crisis, or in cases where great debility has preceded the attack. If any anæmia exists, or if an anæmic murmur can be detected, stimulants must be given early. When jaundice appears, nitro-hydrochloric acid should be given in combination with nitre, as in the following formula:—Twenty minims of hydrochloric acid, with ten minims of nitric acid, every three hours, each dose diluted with the drink of nitre and barley-water already prescribed (Murchison).

Remittent Fever. — *Definition.*— Febrile phenomena of malarious origin, characterized by irregular repeated exacerbations and remissions being less distinct in proportion to the intensity of the fever, so that in malarious yellow fever the exacerbations and remissions are so connected that the fever resembles a continued fever. There is great intensity of headache, the pain darting with a sense of tension across the forehead. It is accompanied by functional disturbance of the liver, and frequently by yellowness of the skin, as in malarious yellow fever, in which, however, the urine is not suppressed, and continues free from blood and albumen. The malignant local fevers of warm climates are usually of this class.

Treatment.—With fever so various in its degrees of severity, it is not possible to do more than indicate the nature of the treatment which may be followed, as every special case must be prescribed for and treated by its own special indications, and with a due regard to the nature of the prevailing epidemic. The best possible hygienic arrangements should be made, especially to secure efficient ventilation, with a plentiful supply of fresh air. In every form and va-variety of the fever one of the most important guides in the treatment is to be derived from the nature of the prevailing disease, whether endemic or epidemic, whether sthenic or asthenic, and to study each individual case in relation to the prevailing type. First, the duration of the stage of the fever must be ascertained—*i. e.*, whether it be of some hours' or of some days' duration, and whether, when the practitioner sees the patient for the first time, the actually existing paroxysm is at its accession or its decline.

Regarding the method of treatment of remittent fever, my friend and colleague, Prof. W. A. Maclean, whose extensive experience in India gives authority to his conclusions, writes in the following terms :—

"I have been led to take a view of the treatment of mala-

rial fevers generally, and remittent fever in particular, differing from that laid down by many authors. It appears to me that the so-called antiphlogistic treatment, so much insisted on by many writers, is based on the belief that the phenomena observed in a case of remittent fever are consequent on a process of inflammation. It is only on such a belief that antiphlogistic treatment can be justified. During the exacerbation of a remittent fever there is violent disturbance both of the vascular and nervous systems. Almost every organ, almost every function suffers,—the gastric intestinal membrane is affected, the liver and spleen suffer, the brain is involved, for rending headache and delirium are often present. Is it rational to suppose that an inflammatory process can be going on at one and the same time in all these various organs? Do the appearances observed *post-mortem* give any support to such a doctrine? If not, on what principle can spoliative treatment be justified? Is it not rather the case that this terrible disturbance of so many organs is due to the presence in the blood of a subtle poison acting on them all? If so, surely the guiding principle of the physician in his treatment should be to counteract this poison, to neutralize it, or to expel it from the system, and so to prevent a recurrence of the exacerbation. This is the principle on which I have long acted, and I am satisfied that it is at once a safe and successful one. In quinine we have such an antidote—a therapeutic agent of unrivalled efficacy, which, if skillfully used, will rarely disappoint the expectations of the practitioner.

"It is always, of course, advisable to have the bowels thoroughly evacuated; and if the patient is seen when his stomach is loaded, it is well to evacuate its contents by an emetic. In ardent remittents, however, there is generally little call for this, as obstinate vomiting is almost always a troublesome symptom, sometimes requiring to be checked. This done, the period of remission must be watched for, and the moment it arrives, quinine in a full dose should be given —not less than fifteen grains in the case of an adult. If the irritability of stomach be so urgent that the remedy is rejected, while measures must be adopted to allay it—such, for example, as alkaline remedies in combination with dilute hydrocyanic acid, turpentine stupes, or even a blister to the epigastrium—time—precious time—should not be lost. Quinine should be given by the rectum, in a full and efficient dose. By mouth or by rectum, or by both, quinine in

quantity sufficient to induce some of the symptoms of cinchonism, should be given before the time of expected exacerbation. According to my judgment and experience, it is bad practice to withhold quinine until an impression has been made on the force and frequency of the heart's action, from fear of increasing headache, causing congestion of organs, or the like. An impression on the force and frequency of the heart's action is best attained by arresting the paroxysm; and this is done most quickly, simply, and effectively by the early administration of quinine. I have over and over again had patients brought to me from the malarial quarters of the city of Hyderabad, in whom it was impossible to distinguish any period of remission—the tongue black and dry, sordes on the teeth, the skin hot and parched, the pulse enormously quick, the intelligence feeble or gone—all pointing to a system so charged with malarial poison as to be well nigh overwhelmed. In such cases quinine, with concentrated beef-tea and brandy, are urgently called for, and should be administered freely; and it is astonishing how men, by such measures, are often snatched from impending death. I have seen in a few hours consciousness return, a striking reduction in temperature, in the frequency of the pulse, with a remarkable accession of force and volume, follow the treatment indicated above. I do not advise, and never used quinine in the heroic doses advised by some. I have never exceeded twenty grains; but within such reasonable limits I have never seen it aggravate headache. On the contrary, I believe that in remittent fever—in fact, in all forms of malarial fever with which I am acquainted—I believe quinine to be a powerful remedy in quieting the tumultuous action of the circulation disturbed by the presence of this terrestrial poison. For some years past Warburgh's tincture has been much used in the treatment of malarial fevers in Southern India. It is a secret remedy, and therefore open to the objections very properly urged against all such remedies. It is now known that quinine enters largely into this remedy, the composition of which is published in the *Lancet*, Vol. II., 1875, p. 716. I have given this 'tincture' a fair trial in some of the gravest forms of malarial fever, and it has also been extensively used by some of the most experienced officers of the Madras army; and I do not hesitate to say that I think it a valuable remedy. I have known it arrest at once some of the severest cases of remittent fever, no exacerbation appearing after the second dose. It almost invariably acts

as a powerful diaphoretic—the most powerful with which I am acquainted. I have seen patients, under the influence of this remedy, saturate not only the bed-clothes, but the very mattress, the patient's room and his person for days after giving out a strong odor of the medicine. For this reason it requires to be used with extreme caution, if at all, in the adynamic form of the disease.

"In urgent cases I follow the practice of the American physicians. I do not wait for a remission, but give quinine at once; and in all I am conservative of the patient's strength. I have seen violent delirium follow free leeching of the temples, and over and over again seen extreme and dangerous prostration follow depletive treatment, and that in cases where the violence of the disturbance indicated power; but these signs of power in the system are often most delusive, and, if combated by depressing measures, we must be prepared for sudden signs of collapse. Against the system of treating this fever by saturating the system with mercury, I enter my strenuous protest. I know nothing more deplorable than the condition of a patient whose constitution, already depressed by the presence of malaria, is further saturated by another poison which acts as a powerful ally of the first."

In the asthenic form of remittent fever, such as that so well described by the late Dr. Murchison as prevailing in Burmah, it is necessary to exercise great caution in depletion. All the cases he relates which had been freely bled exhibited the most aggravated typhoid symptoms, and most of them died. Even in the instance of young and robust recruits, low adynamic typhoid symptoms were sure to supervene in a short time after blood-letting; and, even although it gave temporary relief, it was certain to aggravate, if not to induce, the subsequent typhoid condition. If the headache is very severe and the pulse full; if the hair be cut short, or shaved off the scalp, cold lotions applied to the head, or the cold douche kept up for ten minutes at a time, gives great relief, and is the preferable remedy (Murchison). As soon as possible after the commencement of the paroxysm the bowels should be cleared out with a purgative of calomel and compound jalap powder; or by colocynth, antimonial powder, and calomel. If typhoid symptoms betray themselves, stimulants, such as wine and brandy, must be given; but, as in intermittent fever, "quinine is undoubtedly the sheet-anchor," and it is best given, as in the former fever, in

one large dose of twenty grains in solution at the very commencement of a remission. Carbo-azotic or picric acid has been lately introduced as an active remedy in the treatment of malarious fever. Prepared by Calvert, of Manchester, it is of a light yellow color ; and in doses of two grains, cautiously repeated, it is to be pushed till the patient gets yellow-skinned.

The period of convalescence demands no less careful attention on the part of the medical attendant, especially as to diet and a timely removal from all malarious influences, by a sea voyage, or a change of climate. It is to the mismanagement of convalescence, and a too early discharge from hospital principally, that we must refer the numerous and fatal relapses in the fevers and dysenteries of our seamen and soldiers (Martin).

Rheumatic Fever.—*See Rheumatism, Acute.*

Rheuatism, Acute.—*Definition.*—A specific febrile disorder, due to a morbid state of the system by constitutional development, and expressed by inflammation of a peculiar non-suppurative kind in the fibrous tissues about or surrounding the joints, especially in the white fibrous tissues—such, for instance, as the sheaths of the muscles and muscular fibres, tendons, aponeurosis, bursæ, capsular ligaments, periosteum, and pericardium. Many joints may be affected at the same time or in succession. The various local phenomena of the disease have a tendency to shift from part to part, the most remote from each other; and the febrile state is accompanied by profuse acid excretions from the skin, by the separation, in some cases, of large quantities of uric and sulphuric acid through the kidneys, and by a highly fibrinous condition of the blood.

Treatment.—It seldom if ever happens that the cure of rheumatism can be entrusted to any single remedy. The constitutional nature of the disease, as already indicated, points to various methods and combinations of treatment as most likely to lead to a successful issue. A successful issue in a case of rheumatism means that the attack should be passed through without any permanent organic mischief being left behind. The treatment of rheumatism must provide, (1.) for the acute attack; (2), for the management of the system as regards those conditions of the life of the patient which may have been found to contribute to the constitutional development of the disease.

In the acute attack the patient must be made—(1.) comfortable, being protected from pain and exposure to cold air, especially as regards the joints; (2.) to encourage free excretion from the skin especially, and from the kidneys. The general management of the patient is therefore all important. No linen must touch the skin. A flannel shirt must be worn next its surface, and the patient must be put between soft blankets. "Bedding in blankets reduces by a good three-fourths the risk of inflammation of the heart run by patients in rheumatic fever, diminishes the intensity of the inflammation when it does occur, and diminishes still further the danger of death by that or any other lesion; at the same time it does not protract the convalescence" ("Chambers's Lectures, chiefly clinical," p. 147). The patient ought to be carefully wrapped up in blankets of the newest and fluffiest kind that can be got, which are to be so arranged as to shut off all accidental drafts of air (Dr. Roberts). On no account are the bed-clothes to be thrown off, however warm the surroundings may become; for an evenly high temperature to the skin, combined with absolute rest, are of the greatest value in rheumatic fever. These two conditions are worth all other means of relief put together (Dr. King Chambers). The bed should be protected by screens from draughts of air. All the joints, whether affected or not (*i.e.*, the limbs), ought to be enveloped in cotton wool, a layer of which ought also to be put over the chest on both sides, with an arrangement for permitting the region of the heart to be easily got at for its occasional examination (Dr. Roberts). On the other hand, the following are the indications which have guided Dr. R. Southey of St. Bartholomew's Hospital, London, in the treatment of acute rheumatism:—

"To relieve local pains; to reduce fever; to diminish the gravity of the various complications; and to promote early and complete convalescence. I do not consider that the *materies morbi* are eliminated either by sweating or by purging. A spring bed with a tightly stuffed horse-hair mattress over it, is that which rests and supports the trunk and limbs, and relieves the joints most. I am no advocate for, and have never allowed my patients to be placed between the blankets instead of the sheets; neither will I permit flannel bed-shirts to be worn. The object I have in view is to keep one uniform temperature about them, which the bed provides for; but not to keep the patient swathed in flannel

reeking and saturated with decomposing perspiration. As a matter of fact I observed that a large proportion of hospital rheumatic patients were persons who habitually wore thick flannel shirts and under shirts, and did not change them very often. Cotton shirts and cotton sheetings are better suited than linen to rheumatic people. My practice has been to keep my rheumatic cases cool rather than hot. They are certainly easier in consequence."

As to medical treatment, venesection, calomel, combined with purgatives, colchium, and opium, are the remedies which have been hitherto most generally made use of in the treatment of acute rheumatism. To the success of each of these remedies the late Dr. Latham has borne his testimony, "so far as that, under the use of each," he writes, "I have seen patients get well." No disease has been treated by such various and opposite methods, so that "acute rheumatism has experienced strange things at the hands of medical men." "Had he written in these days Dr. Latham would have had many other strange things" to add to his list:—Alkalies, acids, salines, hot water, cold water, lemon juice, citric acid, chloral, belladonna, iodide of potassium, ergot, digitalis, aconite, guaiacum, emetics, sulphur, antimony, perchloride of iron, quinine, iodine, plaster of Paris bandages, galvanism, subcutaneous injection of carbolic acid, blisters, podophyllum, cynara, propylamine, chloro-hydrate of trimethylamine, and last, but not least, salicine, salicylic acid, and salicylate of soda. All these and many more remedies have been used in rheumatic fever; and each has been extolled as more potent than all the rest (Dr. E. Markham Skerritt, *Brit. Med. Journ.*, July 28th, 1877, p. 104). But as the disease, when uncomplicated, tends to terminate sooner or later in recovery, and may sometimes subside with marvellous rapidity under every variety of remedy, it is obvious that no sound inference can be drawn as to the success of any particular method of treatment, unless such treatment has been largely adopted in cases of exactly similar severity—as estimated by the correlation of pulse, respiration, and temperature (measured by thermometer)—and been attended with tolerably uniform results. Each and every plan of treatment which has therefore been hitherto proposed is regarded by the profession as unsatisfactory. (See account of a discussion upon a paper read by Mr. Dickinson to the Royal Medico-Chirurgical Society of London, and reported in the Medical papers of 21st June, 1862). If in one person's

hands any particular remedial course has proved efficient, it has signally failed in those of another. If at one time a remedy has proved efficacious, it has been found inert or injurious at another, under different circumstances of age, sex, constitution, and the like. These facts ought not to appear strange to those who consider the true nature of the disorder, and the variety of circumstances under which the physician may be called upon to minister to his patient's relief. Bleeding, which in the young, plethoric, and robust, may be necessary to allay excessive vascular action and cause free secretion, may in the weakly induce irritability of the heart, and a consequent attack of cardiac inflammation. Opium, which in one person may prove of the greatest service in promoting free perspiration and in allaying the general irritability of the system, may in another check the biliary, "lock up" other secretions, and thus prevent the elimination of effete or deleterious matter from the system. The continued use of calomel, and constant purgation by it, may be beneficial to one patient, by removing large quantities of unhealthy secretions, but may unnecessarily exhaust the strength of another, and tend very greatly to impede recovery. So, in regard to every remedy which has been proposed: what is useful at one time may prove useless, or positively injurious, at another. Special attention has also been drawn to the fact by the mint-water treatment of Sir William Gull and Dr. Sutton, "that rapid recoveries were often made when the only treatment was good nursing;" that symptoms subside wholly irrespective of treatment between eight and ten days. The average duration of acute symptoms under treatment was 9.1 days; or from the beginning of the disease 17 days. With regard to heart complication it is affected early in the disease—generally within the first week; and if it escaped for a week it would probably escape altogether. Sir William Gull and Dr. Sutton thus came to the conclusion that drugs had little influence in shortening the disease; and many drugs have had the credit of warding off heart complications simply because the time for the occurrence of these lesions had passed before the medicine was given.

To learn how to adapt our present remedies to the exigencies of each particular case is what is now most of all required. Acute rheumatism is manifestly a highly inflammatory disease, but of a peculiar constitutional origin, as has been fully shown. The blood drawn presents a more copious layer of "buff" than it does in most other diseases. The

proportion of fibrine being greatly increased, we can hardly feel surprised that bleeding has been largely had recourse to. But although bleeding has been extensively adopted, the profession has hitherto been much divided as to the advantage derived from the practice. A careful analysis of conflicting evidence leads to the conclusion that general blood-letting is not to be recommended, and on pathological grounds it is not justifiable. No advantage is gained as to time; but temporary, if any abatement of sufferings follows its use; lastly, this mode of treatment appears to have caused in the practice of Bouillaud an unusually large number of cases of myocarditis—a larger number, indeed, than has been witnessed by any other person in the profession. A predisposition to cardiac inflammation is doubtless engendered by copious and repeated blood-letting: one-half the cases of acute rheumatism became so complicated after treatment by bleeding (Dickinson). It undoubtedly increases the irritability of the heart, and consequently favors the production of cardiac complication. General blood-letting is only beneficial in first attacks occurring in young, robust, and otherwise healthy persons, particularly in those cases which are marked by unusual severity of their symptoms, or are unaccompanied by free perspiration. It ought at all times to be cautiously employed and carried to a small extent only—viz., from eight to twelve ounces, according to the age and strength of the patient, the object being to favor the action of other remedies, and to promote free secretion by its use, rather than to arrest or cut short the disease (Latham, Fuller). If, therefore, perspiration is free, and remedies are absorbed, blood-letting is not to be thought of. In mild cases it is unnecessary; in the delicate, and those of weakly constitution, it is inadmissible; and in the well-expressed rheumatic diathesis, or when the disease is distinctly ascertained to be hereditary, it utterly fails in modifying the morbid action, is ill-borne by the system, and therefore should only be practiced under the extremely urgent and specific conditions just mentioned (Willan, Fordyce, Alison, Todd, Watson, Fuller, Dickinson). If circumstances, therefore, ever warrant its employment, it ought necessarily to take the lead of all other measures, and may be used in the young, plethoric, and robust, in whom secretion is insufficient, whose pulse is full and bounding, and whose skin is dry, hot, and burning. A single bleeding is sufficient to relieve the excessive congestion, on which the want of secretion in a great measure

depends, and which forms an obstacle to the action of those remedies on which we rely for effecting a cure. Active purgation is also to be avoided. It is injurious for three reasons: First, Because it is not necessary to the cure of the patient, and, like bleeding, tends greatly to reduce his strength and protract recovery. Second, Because, from the nature of the complaint, the patient is quite incapable of moving, and his sufferings are aggravated, his irritability is increased, and his heart's action accelerated, by the repeated shifting of his position, which is rendered necessary by the calls of nature. And, Third, Because it necessarily gives rise to more or less exposure, which must be prejudicial to a person bathed in perspiration (Fuller). After having obtained one full dejection by the following searching combination, which will secure an abundant flow from the glandular follicles of the intestinal mucous membrane, the subsequent aim should be to obtain merely a single free evacuation every morning.

℞ Calomel. gr. v.; Pulv. Jalap. Co., ʒij.-ʒi.; Pulv. Zingiberis, gr. iii.-gr. v.; misce—to be taken in a little milk.

A daily evacuation of the bowels is then to be maintained by mild salines, such as the potassio-tartrate of soda, sulphate and carbonate of magnesia, taken as a draught in the morning; and preceded every second night by a Plummer's pill at bedtime, combined or not, according to circumstances, with a full dose of opium; or, a grain of the watery extract of Barbadoes aloes may be found sufficient on alternate days. If the bowels act only once a day, a laxative dose of calomel and opium may now and again be prescribed, with the view of modifying the character of the intestinal secretions. Dark-colored and offensive stools indicate the necessity for the dose, followed by a draught of infusion of senna, together with half an ounce of the potassio-tartrate of soda, and twenty minims of the vinum colchici; and these should be repeated every evening and morning till healthier evacuations are obtained—*i. e.*, till the motions are light-colored, more bilious, and less offensive. Opium may be given with the greatest advantage in the early and most painful stage of the disease occurring in adults, to the extent of six or eight grains of the powder in twenty-four hours, or two grains of the extract of opium may be given every night; to children, half-grain doses of the powder, or less, according to age, may be given every three or four hours. The bowels require to be kept open during its use; and its influence requires to be closely

watched. If the urine increases in quantity, if the motions become more healthy in appearance, and the coated tongue cleaner and less red, the influence of opium is beneficial. It encourages sweating. Hydrate of chloral is another valuable soporific and sedative. Colchicum administered alone is a dangerous agent; but its virtue as a remedy may be obtained in small doses in combination with other medicines. It may be given with small doses of ipecacuanha, alkalies, and opium. It promotes evacuation by the kidneys. It is only in some cases, however, that it appears to be of service. It is far less efficacious in the weak and nervous than in the more robust and less easily depressed, and of less value in purely fibrous rheumatism than in cases where the synovial inflammation predominates. It has proved less advantageous in proportion as the fever has exceeded the articular swelling, and as the urine has been less highly charged with lithates. The operation of this remedy must under all circumstances be most carefully watched; and a daily evacuation from the bowels must be secured during its use If the lithates disappear from the urine, if the pulse becomes weak, if faintness, nausea, or purging supervene, the colchicum must be at once discontinued; but till some one of these symptoms occurs, a grain or a grain and a half of the acetous extract or the inspissated juice, or from fifteen to twenty grains of the wine of colchicum, may be safely and with advantage administered two or three times a day (Dr. Fuller).

Veratria is to be used in small doses The ordinary formula recommended is:

Veratria and extract of opium, one grain each, to be divided into ten pills, of which two pills are to be given the first day, three the second, four the third, five the fourth, and so on, increasing one pill each day, until the condition of the pulse or the irritation of the mucous membrane compels a diminution.

The beneficial effects of guaiacum are obtained in those cases which are unaccompanied by perspiration, and in which the excretory organs are gently excited by the action of the remedy; but when the patient is perspiring freely, and when it neither purges nor causes diuresis, very little benefit is obtained from its use. Combined with bitartrate of potass, sulphur, and rhubarb, it constitutes the chief ingredient in a celebrated empirical formula, well known to army medical officers under the name of "Chelsea Pensioner," which has obtained a high reputation amongst old soldiers as a

remedy for the "pains," or chronic rheumatism. In some large hospitals, both civil and military, this remedy is in common use in the treatment of old chronic cases. Its composition is as follows:

℞. Pulv. Guaiaci, ℥ i.; Pulv. Rhei, ʒ ii.; Bitart. Potassæ; Sulphur Sublim., a a ʒ i.; Pulveris Nucis Moschatæ, ℥ ii.; Mel. vel Glycerina, lbi.; misce bene. Of this compound two large spoonfuls may be taken night and morning.

Another formula is the following:

℞. Pulv. Sinapis; Sulph. Sublim., a a ʒ iii.; Pulv. Guaiac. ʒ iss.; Pulv. Rhei, Potas. Nitratis, a a gr. xlv.; misce bene. Honey, treacle, or glycerine, sufficient to make the dose into an electuary, is the most convenient form for use, of which a teaspoonful every alternate evening is useful; or a teaspoonful of the powder may be mixed with milk, and so taken at bedtime.

But, the general treatment of the constitutional disease originally recommended by Brocklesby (1764), and followed successfully by Macbride (1772), Basham, Fuller, Furnival, Garrod, and now by many other physicians, is that by alkalies and the neutral salts, with colchicum, a little antimony being sometimes added, with the occasional aid of calomel, used only as a remedy to promote evacuation from the glands of the intestinal mucous membrane. Alkalies, and the neutral salts, may be given in combination with colchicum, full doses of opium, and a little antimony. They aid disintegration, and increase the elimination of sulphuric acid by augmenting the alkaline condition of the blood (Parkes). The alkalies ought to be given largely. Patients lose their pains under their influence, and proceed rapidly to convalescence. The pulse is generally tranquillized within forty-eight hours from the commencement of the alkaline treatment; and if in twenty-four hours the pain is lulled and the local inflammation greatly subdued, the constitution is evidently coming under the influence of the remedy. The duration of rheumatic fever is undoubtedly shortened by alkalies:—6 to 7 days, as compared with 9.1 days of mint-water cure, and the total duration 13 to 14 instead of 17 (Garrod). The form in which the remedy is to be given is that of a simple saline or nitrate draught, to which from two to three drachms of the potassio-tartrate of soda may be added, with ten to fifteen minims of the vinum colchici, from fifteen to twenty minims of the vinum antimonii, and from ten to fifteen minims of the tinc-

ture of opium, or of Battley's sedative solution, to prevent the salt running off by the bowels. This draught is to be repeated for the first twelve or twenty-four hours, at intervals of three or four hours, according to the strength of the patient and the severity of the attack; and if pain is excessive, a pill containing half a grain to a grain and a half of opium, or an equivalent dose of Dover's powder, may be given once or twice daily. In the use of these remedies, constipation and narcotism are to be avoided on the one hand, and diarrhœa to be guarded against on the other (Fuller). If the saline treatment is to be used alone, then a solution of nitrate, acetate, and bicarbonate of potash should be given in such doses that ten or twelve drachms of the two latter salts together are taken in the twenty-four hours. Half a drachm of the acetate, with a drachm or a drachm and a half of the bicarbonate, and ten grains of nitre, dissolved in an ounce and a half of water and sugar, or lemonade, or barley water, and given every two hours, night and day, until the joint affection and pains have begun to yield in severity, are sufficient for this purpose. Or the following: Nitrate of potash, one drachm; acetate of potash, three drachms; water or barley water, eight ounces; —of this mixture one ounce for a dose ought to be repeated every two, three, or four hours, according to the urgency of the symptoms; or from twenty to sixty grains of the bicarbonate of soda, or of potash, may be given every three or four hours in half a bottle of soda or seltzer water; or in an effervescent citrate of ammonia, or potash draught (Tanner). This is the treatment which most of all seems efficient in warding off the cardiac complications; and Dr. J. J. Furnival was the first (after Prout) to direct the attention of the profession to the use of alkaline remedies (carbonas potassæ) in the treatment of Rheumatism, and especially as a preventive of the cardiac complication (*Lancet*, 1841, p. 305). The good effects of such treatment as a preventive of the cardiac affections have been since fully demonstrated by Fuller, Garrod, Basham, Goodfellow, and others. Dr. Dickinson has given statistics in which the percentage of heart disease occurring under the alkaline treatment was 2.1 as against 31.7 under various other remedies. To be effective, the remedy must be carried out with energy and perseverance, till the articular and febrile disturbance are lessened, and till an alkaline condition of the urine is established as soon as possible. Liquor potassæ in ʒ ss. doses may also

be given to the extent of ʒ iii. to ʒ vi. in twenty-four hours (Parkes). Brocklesby is the earliest authority for the use of large doses of nitre in the treatment of acute rheumatism. He enjoined, for a diluting drink, water-gruel boiled smooth, in each quart of which he dissolved two drachms of nitre, with or without sugar. He often thus prevailed on soldiers to take ten drachms or more of nitre in twenty-four hours. Dr. Garrod speaks well of the combination of quinine with the alkaline treatment after ten years' trial. It is simply following out the treatment by bark (unpractical, from the large doses required) recommended by Fothergill, Morton, and Haygarth. Five to ten grains of sulphate of quinine are to be given two or three times a day. The alkaline and saline treatment of rheumatism as the basis of operation seems the most rational; for it has been demonstrated that in cases of acute rheumatism there is an absolute deficiency of the saline ingredients of the blood; and while there is also a liability to fibrinous exudation, the tendency of saline remedies is to suspend the separation of fibrine (Stevens). The treatment which has saline remedies for its basis thus contributes to restore the balance of the saline ingredients in the blood, and controls the tendency to fibrinous deposition. The progress of inflammatory action being thus retarded, time is gained for other remedies to effect the diminution of the excess of fibrine present in the blood, as well as the destruction of the rheumatic element, whatever that may be. On the other hand, however, the patient is often left weak and anæmic to a marked degree by the use of alkalies; and also, that when heart complications do come on under alkalies they are more troublesome, the effusion of pericarditis is often very large in amount, and there is a greater tendency to carditis. Thus alkalies, while they shorten the disease, do not always prevent complications, and they debilitate the patient. Cases treated by alkaline instead of neutral salt are also slow in convalescence, the patients being weak and pallid for some time afterwards. The experience of Dr. Reginald Southey is also against the alkaline treatment, especially in the relapsing cases. The alkaline treatment or mint-water is, however, equally well adapted for the acute continued form; but alkalies, unless pushed to full and frequent doses, are wholly useless in relieving pain; and in such large doses as half a drachm or a drachm every two or three hours, they quickly reduce the strength, and render the patient extremely anæmic. They

thus retard convalescence not inconsiderably. (*Bartholomew's Hospital Report*).

In 1869, Dr. Russell Reynolds reported, in the *Brit. Med. Journ.*, cases of rheumatic fever treated by the tincture of the perchloride of iron, in doses varying from 15 minims to a drachm every four hours, with or without 20 to 30 minims of glycerine, and spirits of chloroform. In *Brit. Med. Journ.*, of Oct. 2, 1875, he again gave a summary of results in a series of sixty-five cases, in which the relief of pain was often marked and early. In more than half the cases the pain was gone by the tenth day; in 22 per cent. all pain had gone by the fifth day. The pulse sometimes fell from 120 to 40 in two days; and, in several cases, Dr. Reynolds observed a remarkable diminution in the frequency of the pulse, at and after the time at which temperature had become normal, namely—40, 30, and even 28; but regular in rhythm and in force, the patient feeling neither pain nor faintness. The temperature became normal by the fifth day in 36 per cent.; and in severe cases before the tenth day in 50 per cent.; in moderate and slight cases in 71 per cent. Heart disease was present in 48.1 per cent.; but no distinction is made between those cases in which it existed before, and those in which it came on under treatment. In twenty-three cases treated with iron in University College Hospital in 1875, the heart was affected in 30.4 per cent.—a large proportion when compared with those cases of Dr. Dickinson's treated by alkalies, where the percentage was only 2.1. As to duration of the cases also, the cases treated by iron do not compare favorably with those treated by alkalies by Dr. Garrod, where the average duration of the whole number of cases was six to seven days. Dr. Samuel S. Dyer of Ringwood has also given the treatment by the tincture of perchloride of iron an extended trial, and writes as to the satisfactory nature of the result (*Brit. Med. Journ.*, May 6, 1876, p. 563). Quinine has been largely used in France—in large doses—from 15 to 90 grains in the twenty-four hours. The pulse and temperature rapidly fell; the joints were quickly relieved; and the heart was seldom implicated. Combined with the alkaline treatment Dr. Garrod has found quinine more efficacious than either alone—there being less tendency to relapse; and the fever leaves the patient in a much more satisfactory condition. Salicine, salicylic acid, and salicylate of soda have all been recently and largely used in the treatment of acute rheumatism; given in doses of gr. x. to gr. xx. at intervals

of from one to three hours, and in larger doses ot gr. xxx. every hour. Under all of these remedies the average duration of the fever has been remarkably shortened—to 4.9 days under salicine, and 4.1 days under the acid—an advantage of from one to three days over the results of the alkaline treatment, and in comparison with the tincture of iron treatment, in which the temperature became normal in half the cases in ten days, under salicylic acid it became normal in half the cases in three days. The duration of rheumatic fever has, therefore, been shorter under these remedies than it has been under any other plan of treatment. But there is no evidence that either of these are specific remedies, for they do not cut short the disease; nor prevent relapses when under their influence; nor do they ward off complications. They seem rather to act by reducing temperature as they do in other febrile conditions, and they lessen the chance of complications in the same proportion as they shorten the disease (Dr. Markham Skerritt). The observations of Furbringer, Reiss, Fischer, Stricker, and others have established the fact that these remedies possess a remarkable power of lowering the abnormally high temperatures in febrile diseases. In Dr. Stricker's experience of the drugs in acute rheumatism, salicylic acid may be given in hourly doses of from grains vii. to xv. without injury to the human system; and for a longer time to young and vigorous subjects than to the old and feeble, as toxic symptoms appear sooner in the latter than in the former. These toxic symptoms are of various degrees—such as, noises in the ears, difficulty of hearing, and perspiration, which, when they appear, contraindicate the further use of the remedy.

"In an interesting paper in the *Lancet* of 4th and 11th of March, by Dr. T. Maclagan, recently of Dundee, on the treatment of acute rheumatism by salicine, the author relates seven cases of acute and subacute, and one of chronic rheumatism, treated with this remedy, and gives the following conclusions as the result of his experience:—(1.) We have in salicine a valuable remedy in the treatment of acute rheumatism. (2.) The more acute the case, the more marked the benefit produced. (3.) In acute cases, its beneficial action is generally apparent within twenty-four, always within forty-eight, hours of its administration in sufficient dose. (4.) Given thus at the commencement of the attack, it seems sometimes to arrest the course of the malady as effectively as quinine cures an ague, or ipecacuanha a dysentery. (5.)

The relief of pain is always one of the earliest effects produced. (6.) In acute cases, relief of pain and a fall of temperature generally occur simultaneously. (7.) In subacute cases, the pain is sometimes decidedly relieved before the temperature begins to fall; this is especially the case when, as is frequently observed in those of nervous temperament, the pain is proportionally greater than the abnormal rise of temperature. (8.) In chronic rheumatism, salicine sometimes does good where other remedies fail; but it also sometimes fails where others do good. These conclusions, it will be seen, agree closely with those arrived at by Stricker and Reiss with regard to salicylic acid. The dose of salicine used by Dr. Maclagan was from ten to thirty grains every two three, or four hours; fifteen grains being an average dose."

As to salicylate of soda, Dr. R. Southey gives fifteen grain doses every two hours till sixty grains are taken, and then continues with fifteen grain doses every four hours, to keep up the effect of the drug; and if pericarditis is present he adds five drops of liq. opii. sedativ. with each dose. His experience of the perchloride of iron, as recommended by Dr. R. Reynolds, is not favorable. In the acute continued cases it has been associated too frequently with hyperpyrexia to regard it as altogether free from danger; and in the relapsing forms, its administration neither shortened the cases nor prevented relapses. These relapsing cases of rheumatism may be kept on salicylate of soda very well for the first seven days; but the opportunity of the spontaneous remission which then generally takes place, and is indicated by the thermometer and the patient's own sensations, should be seized to shake the periodicity of the complaint. This quinine has the power of doing, given in the proper doses, as in ague, and at the proper date. Dr. Southey gives two ten-grain doses at two hours' interval, between five and seven p. m., on the evening of the seventh day, and repeats the dose on the evening of the ninth day again. The natural relapse is then postponed, and the patient may be permitted better nourishment, and given a little pepsine and acid with his dinner to ensure its better digestion. Should no relapse happen, again on the fourteenth and sixteenth days full doses of quinine should be given; but it is not till the thirty-second day is past that all risk of a relapse is over. During convalescence, although the patients are anæmic, Dr. Southey does not recommend iron, as the mineral acids and tincture of nux vomica promote appetite and digestion far better. Quinine

and iodide of potassium has long been a favorite draught of his in treating the anæmic relapsing forms. Two grains of quinine are combined in it with five of iodide of potassium, to be taken every four or six hours after the fourteenth day (St. Bartholomew's Hospital Report, Vol. XIV., 1878, p. 22). Hyperpyrexia may occur suddenly and rapidly in acute rheumatism, as in other diseases. The temperature may rapidly rise to a height incompatible with life, with evidence of profound nervous disturbance ; and usually by the disappearance of pain from the joints. Such hyperpyrexyia has supervened under all sorts of treatment. The extremest vigilance on every one entrusted with the care of the patient must be inculcated ; and on the appearance of anything strange in the aspect or demeanor, to use the thermometer assiduously ; and, if ever it rose to 105° Fahr., to send at once for the physician (Dr. H. Thomson). Treatment directed simply to the reduction of temperature may save the life of the patient. A temperature in rheumatic fever above 106.5° Fahr. has hitherto been invariably fatal ; spontaneous recovery has never been known to occur when the temperature has passed 106.5° Fahr. ; but death has occurred before this temperature has been reached—at 105.8° and 106°. Hence the commencement of active treatment by the cold bath ought not to be delayed when such a temperature has been reached. If left alone, the patient must die ; and the only treatment which has succeeded with such cases has been the effectual external application of cold, by the bath, at a temperature of 90° or 95° Fahr. in the first instance ; gradually reduced by the addition of cold water to 70° Fahr., or even lower in some cases. As far as the bath is concerned we must take the thermometer for our guide.

"It is important to remember that the bath should be prepared and everything got ready before this ; for the final rise of temperature is often very rapid—5.5° in an hour and a quarter—from 104° to 109.5°, and the patient may die before the treatment can be applied. There is another practical point to be borne in mind—that there is almost always a considerable fall of temperature after the patient is removed from the bath, so that it is not safe to bring the temperature down to the normal in the bath. I remember, in the early days of this treatment, how a friend of mine reduced the temperature of a rheumatic patient to normal in the bath, and, to his consternation, found it would not stop there, but kept going down till it reached 93.2° ; there it was fortunately

brought to a stand. The amount of this subsequent fall varies, but the average may probably be safely taken as 4°. In accordance with this, I removed the patient from the bath when the temperature was 102°, and the subsequent fall, occurring in the next ten minutes, was exactly 4°, bringing the temperature down to 98° " (Dr. Markham Skerritt).

So singularly calming is the bath, even when there is no great exaltation of the body heat, that it may be administered as a simple palliative in all exacerbations of delirium and restlessness, although the heat may have fallen far below its maximum intensity, even to 102° Fahr.

External topical applications are efficient aids in treatment. Warm anodyne fomentations are always employed with advantage ; and of all applications a mixed alkaline and opiate solution, applied as a fomentation, is the most powerful in allaying pain. The solution so highly recommended by the late Dr. Fuller for this purpose, is composed of an ounce of the carbonate of potash dissolved in a pint of the decoction of poppies or of rose water, to which six drachms of Battley's solution (Liquor sedativus) is added, or common tincture of opium, which is less expensive and equally efficient as an external application, but less strong. Chloroform and belladonna liniment (as recommended by the late Dr. Sibson) is an excellent pain-relieving local application in either the acute or relapsing form of the disease. If the hands, elbows, knees, or feet are the seat of inflammation, gloves or caps are made of the spongiopiline to fit these parts ; if a greater extent of surface be involved, a portion of the spongiopiline is cut large enough to envelop the entire surface. The spongy surface of this epithem is first moistened freely with water, and any superabundant fluid squeezed from it, so that the linen or bed of the patient may not be unnecessarily wetted. Nitrate of potash, or the salt to be employed, in powder, is then freely and plentifully sprinkled over the moistened surface, or rubbed in, to secure its solution and the thorough impregnation of the epithem ; it is then applied to the inflamed part, and lightly secured by a roller. Nothing further is required than once in about six hours to remoisten the spongy surface ; fresh addition of nitre is never required, if sufficient quantity has been used in the first instance. The salt in powder is hence better than a saturated solution, which nurses seldom succeed in making (Basham, Med.-Chir. Trans., Vol. XXXII., p. 10). Alkaline baths are recommended by Dr. Austin Flint. Two pounds of the bicar-

bonate of potass and one pound of the nitrate of potass are to be dissolved in water, at a temperature of 100° or 99° Fahr. ; and the patient ought to go into the bath at a temperature of 98° or 98.5° Fahr., and remain for not longer than ten minutes. A tepid bath at 98° or 96° Fahr., into which the patient can be dipped suspended on a sheet, and lifted similarly back to bed, comforts them and secures their cleanliness (Dr. R. Southey). Hot air, or vapor baths, different forms of cold bath, the hot blanket pack bath (as advocated by Dr. T. S. Dow, see in *Brit. Med. Journ.*, 1875, p. 40), or sponging the skin with cold or tepid water, are each in turn methods of treatment which have given relief ; but baths ought never to be employed if the skin is acting freely ; only if it is hot, dry, and burning, its action may be successfully stimulated by means of some of these baths.

In contradistinction to the principle of cure now laid down, and which has been called the method of neutralization, Dr. Herbert Davies, Physician to the London Hospital, has recently advocated a method by elimination, originally recommended by Dr. Dechilly, of Vancoulgurs, in France, in a Memoir to the Academy of Medicine, in 1850 (*Bul. de l'Acad. de Med.*, t. xv.), as a safe and rapid mode of combating rheumatic fever. For this purpose his treatment is absolutely and entirely local, and consists of free blistering only. Believing that the virus localizes itself for a time in the inflamed joints, and that the intensity of the local inflammation is a measure of the amount of virus collected, he orders blisters varying in width, but of considerable size, according to the locality, to be appiled round each limb, and in close proximity to the parts inflamed. Thus he affords, through the serous discharge from the blistered surface, a ready means of exit for the virus. The blisters are to be applied near to, but not upon every joint inflamed, at the very height of the inflammatory stage, even when the local pains are the most severe, and the constitutional disturbance the greatest. Dr. Dechilly enveloped the whole joint in a large blister, followed by others, according as joints became affected. Dr. Jeaffreson, of St. Bartholomew's, and Dr. Greenalgh, of the Middlesex Hospital, report favorably as to the results of Dr. Davies' method of treatment of acute articular rheumatism. So also does Dr. Thomas B. Peacock, of St. Thomas' Hospital (*Brit. Med. Journ.*, Jan. 18, 1873). It has been tried in France also, and reported on favorably by Dr. Laséque, of the Necker Hospital in Paris (*Arch. Gén.*

de Med., Nov., 1865). The success of the plan is said to depend entirely upon the blisters being applied and allowed to remain until they have thoroughly acted. Linseed-meal poultices subsequently applied will be found highly serviceable in promoting a sufficient flow of serum. The blisters should be put entirely round the affected limb; and when the knees are the joints which suffer, the blisters should be cut at least three inches wide. If this method of treatment be adopted, no medicine ought to be given beyond an occasional purge, and no advantage results from combining the alkaline or neutralization system of treatment with that by blisters, or the method by local elimination. If the two methods are combined, the period of convalescence is protracted. In some few cases, however, Dr. Peacock is of opinion that constitutional treatment ought to be freely used in combination with the blistering. In other cases it is of advantage to combine the blister treatment with such tonics as quinine and iron. In the practice of Dr. R. Southey, of St. Bartholomew's, London, painting the affected parts in the acute continued form with a mixture of equal parts of liniment of iodine and tincture of iodine has appeared to procure all the benefit advocated by Dr. Davies for his blister treatment. That the poison is really thrown out by the blister method of treatment is deduced as well from the rapid and permanent relief resulting from the local treatment as from the neutral and even alkaline condition of the urine, which is a usual and early result of the treatment, as well as a rapid diminution in the force and frequency of the pulse (*London Hospital Clinical Reports*).

The diet of the patient, in acute rheumatism, should be strictly limited to slops, such as arrow-root, beef-tea (Liebig's Extract of Flesh), milk and lime-water, or milk made warm, to which a little carbonate of soda, nitrate of potash, or bicarbonate of potash is added; light puddings, to which sherry or brandy may be added, if depression exist; and even in many chronic cases it is desirable to limit the diet to puddings and white fish. To obviate the great drain upon the system, it is necessary, however, that the rheumatic patient be better fed than in cases of idiopathic inflammation. Beef-tea and jellies may be given, and strong coffee might also be administered frequently, on the same principle that it has been given in typhus fever by Dr. Parkes, following up the indications obtained from the physiological action of that beverage as expounded by Lehmann.

The nature and treatment of the local complication, such as pericarditis, will be considered separately; but in addition to the alkaline remedies, which have an undoubted influence in shortening the duration of the illness, the bedding in blankets, is a most important measure for preventing the cardiac affection, especially in cold weather and in cold climates.

Rheumatic Arthritis—*See Osteo-Arthritis, Chronic.*

Rheumatism, Chronic.—*Definition.*—Chronic pain, stiffness, and swelling of various joints.

The Treatment of chronic rheumatism does not differ in its general details from that of acute rheumatism. Decoction of cinchona, preparations of guaiacum, with alkalies and colchicum, are the best remedies after the action of such searching evacuants as calomel and jalap have removed morbid accumulations, and improved intestinal secretions. The various forms of the so-called "Chelsea Pensioner," comprising guaiacum and sulphur, the composition of which is given under "Rheumatism, Acute," are of great service. Iodide of potassium is also of great benefit in the arthritic forms of chronic rheumatism, combined or not with preparations of aconite and colchicum. Warmth of flannel and the warmth of bed, with free perspiration, generally tends to mitigate and shorted the severity of the paroxysms of chronic rheumatism.

Rheumatism, Gonorrhœal—*See Gonorrhœal Rheumatism.*

Rheumatism, Muscular—*See Muscular Rheumatism,*

Rickets.—*Definition*—A constitutional disease of early childhood, characterized by a cachexia which precedes for several weeks or months a peculiar lesion of the osseous system, manifested by curvature of the shafts of the long bones and enlargement of their cancellous extremities. The growth of the bones is characterized by irregularity, by non-solidification of their growing layers, and by the progressive formation of medullary cavities in the old bone, thus rendering the body laminæ thin and brittle (Virchow). Some of the solid visceral organs also exhibit peculiar lesions, such as in the spleen and liver, where there is generally lardaceous disease.

Treatment.—Ventilation of the room in which the child lives is of first importance. Milk diluted with lime-water (about a fourth part), and a teaspoonful of cream added, is the best of food, or the Swiss preserved milk. Sugar ought

not to be added to the milk. Liebig's Food for Children, or Valentin's flesh juice, "Maltine," Parrish's Chemical Food, and Trommer's Extract of Malt, are all valuable agents in the dietary. About once a week a dose of rhubarb, soda, and calumba, in equal parts, should be given, followed next day by a teaspoonful or more of castor-oil. Prepared chalk and soda may also be given twice or thrice a day, with or without rhubarb and calumba (see under treatment of Scrofula). When the febrile disturbance is subdued, the child should live as much as possible in the open air. Vinum ferri ought then to be given in the following formula? ℞. Vin. ferri f ʒ i. ʒ ii.; quiniæ sulph., gr. i., acid sulph. dil. m i.-ii. This form is especially useful when the skin is flabby, covered with perspiration, and anæmia well marked. Or small doses of the syrup of the phosphates of iron, quinine, and strychnia, or syrup of the phosphate of iron and lime, may be given along with the food, or just before meals. Cod-liver oil is of essential service; but the stools ought to be examined daily; and if any of the oil passes by stool its dose ought to be diminished, or its administration suspended for a time. (Sir William Jenner, *The Medical Times* of 1860, Vol. I).

Ringworm—*See Tinea Tonsurans.*

Rotheln—*See Measles, German.*

Rubeola—*See Measles.*

Saturnism—*See Lead Palsy.*

Scabies.—*Definition.*—Lesions consisting of an eruption of distinct slightly acuminated papules or vesicles, accompanied with constant itching, due to the irritation caused by the burrowing underneath the epidermis of a female Acarus ("Sarcoptes scabei"), for the purpose of depositing her eggs.

Treatment.—Such applications are to be made to the skin that, while tending to kill the Acari, they will not increase the irritation of the dermis; and if the Acari are thus destroyed, the eruptions will in general subside in due course. If much irritation of the skin prevails, warm baths are to be prescribed, and opium may be given internally. In healthy adults the whole body of the patient ought first of all to be thoroughly scrubbed over with good black (soft) soap, and the process continued for at least half an hour. The patient

should then get into a warm bath, in which he should remain for another half hour. Having thus washed and dried himself thoroughly, he is to rub himself over with the following ointment:

℞. Subcarbonatis Potassæ, ʒ i.; Sulphuris, ʒ ii.; Axungiæ, ℥ xii.; misce.

Next morning a warm bath is to be taken to clean the surface of the body from the remains of the anointing of the previous night. The cure ought now to be complete, so far as the destruction of the Acari is concerned (Hardy, Helmerich, Anderson). The genuine pomade of Helmerich is one-third stronger than that which has been just quoted from Dr. Anderson. The potash in the black soap and ointment acts as a solvent of the epidermis, and thus allows the sulphur to come into more immediate contact with the Acarus. A warm bath and plenty of hot water ablution completes the cleansing process. The treatment may, however, be inapplicable to children, females, and men with delicate skins or constitutional affections of the skin. In them, although the principle of treatment is the same, the process of cure must be more slowly conducted by less powerfully irritant substances. The patient having cleansed himself thoroughly in a warm bath, with ordinary yellow soap, the following lotion may be applied:

℞. Calcis, ℥ ss.; Sulphuris, ℥ i.; Aquæ, ℥ viii. These ingredients are to be boiled and stirred constantly till a homogeneous mixture is produced, which is to be strained through a sieve.

These ingredients ought to produce a quantity more than sufficient for one person, and should be rubbed into the skin, not too roughly, every night for several evenings. The cases of scabies in the Belgian army are treated by this lotion (Velminskz, Anderson). When the person affected is predisposed to exematous eruptions, the following application is recommended:

℞. Sulphuris, Olei Fagi, a a ʒ vi.; Saponis Viridis, Axungiæ, a a lbj.; Cretæ, ʒ iv.; misce.

This ointment should be well rubbed in, after the skin has been prepared for it by the use of the warm bath and cleansing the body with common yellow soap. The potash in the black soap of the ointment acts as already stated, the chalk tends to remove the epidermis mechanically, the tar counteracts the tendency to eczema, and the sulphur destroys the Acari. The ointment ought to be left on overnight

(if the skin is not too irritable), and should be washed off in the morning (Wilkinson, Hebra, Anderson). Specific printed directions should be given to each patient; and cards are useful for this purpose, similar to those in use in the Dispensary for Skin Diseases in Glasgow. The following are the directions printed on each card, which is given to each patient along with the quantity of ointment required:

"1st. Scrub the whole of your body (except the head) as firmly as possible, without hurting yourself, with black soap and water.

"2nd. Sit in a hot bath for twenty minutes, or if you cannot get a bath, wash yourself with hot water thoroughly.

"3rd. Rub some of the ointment firmly into the skin of the whole body (except the head) for twenty minutes. Let the ointment remain on the body all night.

"Repeat these processes every night for three nights, and then return to the dispensary.

"Besides, put all your washing clothes into boiling water, and iron all your other clothes thoroughly with a hot iron."

The ordinary compound sulphur ointment of the pharmacopœia is also an efficient remedy. The cure being complete so far as the person is concerned, care must be taken to destroy the Acarus and its eggs which may be amongst the clothes of the patient. For this purpose they should be exposed to hot air at the temperature of at least 150° Fahr., or boiled in water, or exposed to the action of sulphur by steaming them amongst sulphur vapors. If such methods are systematically carried out, itch cases ought never to occupy hospital beds, either in civil or in military life.

Scarlet Fever.—*Definition*—A specific febrile disease, the product of of a specific contagion, which is reproduced during the progress of the affection. The duration of the incubation stage may be only a few hours; in a large proportion of cases it probably does not exceed forty-eight hours, and very rarely exceeds seven days (Murchison). On the second day of the illness, or sometimes later, a scarlet efflorescence appears on the fauces and pharynx, and on the neck and face, which spreads over the whole body, and commonly terminates in desquamation from the fifth to the seventh day. The fever is accompanied with an affection of the kidneys, with albuminuria, often with severe disease of the throat, or lymphatic glands of the neck, and is sometimes followed by dropsy and other lesions. The disease

runs a definite course, and, as a rule, occurs only once during life.

Treatment.—Scarlet fever being accompanied by apparently inflammatory symptoms, the practice of bleeding has prevailed on the first breaking out of the disease in all countries, and with the most disastrous results (Willan) ; so that Morton speaks of witnessing 300 deaths from scarlatina in a week. This practice prevailed down to the time of Huxham, who abandoned it, and introduced a treatment by bark. Thus an entirely opposite system of treatment has been gradually introduced, and the records of medicine enable us to state the results of these opposite modes :—"Of cases treated at the Foundling Hospital by bleeding in 1786, and of cases treated at the London Fever Hospital in 1829, in the same manner, one in six died after bleeding, while only one in twenty-two died after a directly opposite mode of treatment. The conclusion was inevitable, that the chances of recovery are diminished by the practice of bleeding, nearly in the ratio of four to one, as compared with the chances of recovery supposing the patient not to have been bled.

It should be laid down as a maxim, that in cases of scarlet fever medical advice ought always to be had recourse to as early as possible ; for the worst cases we meet with are those in which the disease has, from its apparently mild character, been left to itself. In the mildest form of the disease it is sufficient to confine the patient to the house ; to enjoin strictly a milk diet ; to regulate the bowels ; and, above all things, to avoid the nimia diligentia medicorum. Any active interference with the normal course of the disease is to be avoided. The sick room ought to be kept at a uniform temperature, and not exceed 60° to 65° Fahr. The patient must not be overladen with bedclothes ; and the skin ought to be sponged over twice daily with tepid water, different parts being exposed in succession, and carefully dried with soft cloths. The water should be used without soap, but with an abundance of Condy's fluid in it. As much fresh air as possible should be admitted to the room. The best drink is water, pure and cold ; while soups of meat, Liebig's extract of meat, stewed fruit, and milk, ought to form the staple diet. Constipation is to be overcome by enemata of tepid water and salt, avoiding purgation by medicine. In the simpler cases of scarlet fever such management is sufficient.

In the cases commencing with much sickness and general disturbance, a gentle emetic at the outset is believed to modify the future course of the disease. Ipecacuanha, with or without tartar emetic, is the best form for administration; and half an ounce of castor oil ought to be given after the action of the emetic has ceased. Looking to the morbid condition of the blood, and to the tendency which exists to the deposition of fibrine in the right cavities of the heart, small doses of carbonate of ammonia (three to seven grains), administered every hour, or every three hours, as soon as the symptoms are decided, have been recommended (Peart, Witt, Richardson). Or, the liquor ammoniæ acetatis may be used with an excess of ammonia, to the amount of from three to five drops of liquor ammoniæ added to two fluid drachms of the former in a liberal quantity of distilled water (Richardson). It is important to administer these medicines in small and frequently repeated doses; and, if possible, let the remedy be taken as a drink; and as such chlorate of potash may be used freely.

The treatment of the milder forms of the fever, when the tonsils are considerably enlarged, is, first, to tranquillize the stomach and allay its perverted action when vomiting exists, either by small doses of the sulphate of magnesia, or by effervescing salines—medicines which, according to the state of the bowels, may be given every four or every six hours. The gum resin of guaiacum is of great service in subduing the cynanche tonsillaris, and may be prescribed in the following formula:—

℞. Magnes. Sulp., ʒ vi.; solve in Aqua, ℥ viii.; adde Pulv. Guaiaci, ʒ iss.; Pulv. g. Tragacanth. co., ʒ ij.; *misce bene.* One-sixth part of this mixture may be given every four hours, till the bowels are freely moved.

As soon as this object is effected, and it is ascertained that the tonsils are still greatly enlarged and swollen, it may be necessary to relieve them, if no adynamic symptoms exist, by the application of six to twelve leeches about the angles of the jaw; and the bleeding may be further encouraged by the application of a poultice. The trifling loss of blood thus sustained does not impair the general strength of the patient, if it is done sufficiently early, while it greatly reduces the swelling of the tonsils, and may prevent them becoming permanently enlarged. Another advantage is gained by the application of leeches to the throat—namely, that they relieve the affection of the head symptoms. If the tonsils are thus

relieved, the fever ought to be permitted to run its course uninfluenced by medicine, beyond the occasional administration of the saline draught and ice, or the inhalation of steam. Such remedies should be persevered in till the disappearance of the eruption, and till the healthy granulations of the throat, and the decline of the fever, give evidence of a state of convalescence. At this point some mild tonic medicine is desirable. With children under ten years of age, however, it is better to trust to the soothing effects of warm poultices round the throat, and inhalation of steam, than weaken the child by loss of blood.

The severe forms of the disease, characterized by the less swollen state of the tonsils, and by their being more livid and gorged with blood ; by ulceration being deep and spreading ; by the slough being fouler than in the milder varieties ; and by the greater tendency of the inflamed parts to run into mortification—the necessity of adopting a more stimulating plan of treatment, and one more calculated to support the powers of the constitution, is manifest, and experience has shown its good results. Nourishment in the form of soups, meat extracts, or milk, must be given in small quantities frequently repeated, in proportion to the prostration of the patient. The administration of wine, and of the "*extractum carnis Liebigii*," should therefore be the basis of the treatment of such cases. The quantity of wine for an adult may be from four to six ounces in twenty-four hours, and for a child about half that quantity or less. The wine should be taken in small quantities, mixed with two-thirds water ; or it may be given with sago, arrow-root, jellies, or other demulcent food. The earlier the wine is given in the disease the better, whether delirium does or does not exist ; regardless, also, as to whether the tongue is moist and white, or brown and dry ; and it should be continued till the patient is convalescent. Liebig's extract of flesh may be given like beef-tea, as a drink. While pursuing this plan, it is necessary that the patient's bowels should be attended. In cases more severe, brandy may be required, or carbonate of ammonia in liquor cinchonæ ; and iron in some form should be given in frequently repeated small doses, either with the nourishment or with the medicines already mentioned ; or it may be combined with quinine and aromatic sulphuric acid.

If an emetic is first given it may be proper, before adopting any special continuous mode of treatment, to follow its action by a dose of calomel as a purgative, and this especially

with robust children, to be followed in six or seven hours by castor-oil or magnesia ; and the bowels are ever afterwards to be kept open by remedies suited to the state of the patient and the nature of the disease. The following are the principal indications which must guide the treatment :—If there is much excitement of the system, in an otherwise strong, well-grown subject, depleting cathartics are to be given ; if nausea and vomiting prevail, a seidlitz powder is of service ; if the discharges from the rectum are acrid and acid, with acidity of the stomach, magnesia is preferable · if there is abdominal pain, castor-oil with opium (Wood).

Again, when the synovial membranes inflame, and the joints become enlarged and swollen, all stimuli should be withdrawn, and a moderate action of the bowels should be kept up by means of the sulphate of magnesia, with camphor mixture, or with carbonate of ammonia, or quinine in infusions of chiretta or of gentian ; and if pain be severe, some sedative should be added, as the tincture of hyoscyamus in a dose of fifteen minims.

The more formidable affection in scarlet fever is dropsy, sometimes with effusion into the pleuræ. Bleeding by leeches over the region of the kidneys is then of service, in cases which will tolerate this remedy, especially if œdema appears in the face, and is accompanied by headache,—from two to four ounces in the child, and from four to eight ounces in the adult may be taken. The good results of cupping (even of dry cupping) are also very remarkable ; and of continuously hot poultices over the lumbar region, with or without the addition of digitalis. By these means renal congestion is relieved, and the urine becomes more copious and less albuminous. Hot air or vapor baths, to excite cutaneous action, may be also of service, combined with diluent drinks. Diaphoretic doses of antimony, and moderate but not severe purging, may be had recourse to, if anasarca makes progress. The compound powder of jalap, or the bitartrate of potash alone in drachm doses, three times a day, are then most useful, especially as an electuary, in which the cream of tartar is mixed with nearly an equal quantity of honey, treacle, or marmalade, or syrup of ginger, and flavored if necessary, with a few drops of peppermint oil. Squills and digitalis are also of special service as diuretics till the urine resumes its natural appearance. In young children (of five years of age and under) digitalis in scarlatinal dropsy is almost always beneficial, given in combination with perchloride

of iron. It is followed by a steady increase in the quantity of urine, with a corresponding subsidence of effusion. Five minims of the tincture of the perchloride of iron, with a drachm and a half of the infusion of digitalis in anis or caraway water, may be given three times a day, and continued without intermission for fourteen days. Children bear such doses, and larger ones, of digitalis remarkably well; and the infusion in preference to the tincture, with iron and a nutritious diet (Cheadle, *Brit. Med. Journ.*, November 23, 1872). The muriated tincture has the best reputation. The iodide of potassium in small doses is also useful; and with this latter remedy the syrup of the iodide of iron may be combined, if it is desirable to continue the chalybeate; or syrup of the phosphate of iron, combined with glycerine in drachm doses of the combination.

Gargles are unnecessary for children, for they cannot gargle; but they are of the greatest service, especially the deodorizing gargles or washes, when the patient can be taught to use them. A weak solution of chloride of lime, or of chlorine water, or of Condy's fluid, or permanganate of potash, is well adapted for such a purpose. The following is recommended as a most efiectual gargle:

Solution of peroxide of hydrogen (containing ten volumes of oxygen), six ounces; tincture of myrrh, an ounce; rose water, five ounces (Richardson).

This gargle may be used at pleasure; it is refreshing to the patient, and removes the offensive secretions. With young children, who are unable to use a gargle, the throat may be washed out, by holding the little patient with the face downwards, and then pumping the solution over the surface of the fauces through a bit of gum catheter from a double-acting india-rubber bag (Richardson, Clinical Essays, p. 110). As an invariable routine practice, Dr. W. T. Gairdner strongly recommends that "the steam of hot water should be inhaled from the beginning to the end of the fever, as long at least as the throat is sore." In slight affections it is sufficient to employ infusion of linseed in water, acidulated with nitro-muriatic acid, weak solutions of alum, nitre, or common salt. When membranous diphtheritic patches are observed on the fauces, and the color of the mucous membrane is of a dark-red, capsicum infusion, or powdered red pepper, is an excellent application (Wood); and in children who cannot gargle, it may be applied with a hair pencil. Solutions of zinc, or nitrate of silver, are also of service. Ul-

cerations may be touched daily with a solution of nitrate of silver (one drachm to two ounces of water), applied by means of a hair pencil or a sponge probang; while a weaker solution (grains v. to x. to two ounces of water) is at the same time injected through the nostrils when there is discharge, and it gives great relief. Turpentine and glycerine in equal parts brushed over the ulcerated throat is also a valuable application, and the sulphurous acid spray may be of service. In swelling of parotid and submaxillary glands, ice in bags of oil silk fastened round the neck and angle of the jaw, with lumps of ice in the mouth, diminish engorgement, and tend to avert suffocation. These details are given because the physician must decide, upon the merits of the individual case, the nature of the treatment he will adopt. It must be remembered that cases of scarlet fever, if left to themselves, with rest and careful nursing, will generally get well unless the epidemic constitution is a malignant type. The mere intensity of the fever is no ground for active interference by way of treatment, if the pulse is full and of good strength. Much is to be trusted to the shortness of the fever, remembering that there is no disease in which the patient is more apt to be delirious, and in which the temperature may reach a high degree, with less danger, than in scarlet fever, (W. T. Gairdner, Clinical Medicine.) On the other hand, it must also be remembered that any continuous and excessive increase of the temperature of the body may be followed by the occurrence of adynamia and threatened paralysis of the heart from excessive prostration, and that such cases suddenly and urgently demand such therapeutic interference as may tend to reduce temperature and maintain the strength. Treatment by the cold water douche or affusion, as originally advocated by Drs. Jackson and Currie, is now again recommended in the treatment of malignant scarlet fever, where the cerebral symptoms are early and severe. Niemeyer and others bear testimony to its having a most markedly beneficial effect. The patient may be placed in an empty tub, and have the cold water poured over him, or his naked body may be wrapped in wet sheets, to be renewed and reapplied at intervals of ten to fifteen minutes, the patient being put to bed in the interval. If either of these measures fail, then such powerful stimulants as carbonate of ammonia, camphor, or alcohol, may be had recourse to, administered by enemata if need be, combined with milk or beef-tea, or gruel.

Preventive Treatment.—Mere fumigation will not, it should be remembered, destroy the miasmata in the sick-room; and, consequently, the doctrines of separation, of ventilation, and of cleanliness, are as imperative in this disease as in small-pox. The isolation of healthy persons from those affected with the disease, and from those who have intercourse with such patients, is essential, and is the only rule that promises any good results. The following rules (drawn up from the experience of Drs. Ballard and Budd) ought to be carried out in every house where conveniences can be obtained; such conveniences ought to exist in every hospital, and in the houses of the poor they ought to be carried out as far as practicable (1.) Remove from the sick apartment all superfluous woolen or textile matters, such as carpets, curtains, and anything of that nature, which are known to be retentive of disease-germs. (2.) Measures of disinfection should be used as early and as thoroughly as possible. Carbolic acid in solution, or as carbolate of lime, is especially useful to sprinkle on the floor, and with which all parts of the room may be washed prior to cleansing and lime-whiting; and all articles to be washed ought to be soaked first in a solution of carbolic acid. (3.) A basin charged with chloride or carbolate of lime, or some other convenient disinfectant, is to be kept constantly on the bed for the patient to spit into, which must be emptied and replaced at regular intervals. (4.) A large vessel (a tub) containing water impregnated with Condy's fluid, or carbolic acid solution, should always stand in the room (or near by) for the immediate reception of all bed and body linen on its removal from the person or contact of the patient. (5.) In place of using pocket-handkerchiefs, use small pieces of rag for wiping the mouth and nose, so that each piece, after being used, may be at once burned. (6.) Two basins, one containing Condy's fluid or carbolic acid solution, and another containing plain soft water with carbolic soap, and a good supply of towels, must always be ready and convenient, so that the hands of nurses may be at once washed, first with soap and water, and then in Condy's fluid water without soap after they may have been soiled by specific excreta. The dresses of nurses and attendants should be of linen, or smooth washable material. (7.) Glasses, cups, and other vessels used by or about the patient, are to be scrupulously cleaned before being used by others. (8.) The discharges from the bowels and kidneys are to be received, on their very issue from the body, into vessels charged

with disinfectants. (9.) To prevent the minute particles of desquamation from flying off as impalpable powder, their power for evil must be destroyed in situ, by anointing the surface of the body (the scalp included) twice a day with olive oil. It may be slightly impregnated with camphor, which Dr. Budd considers sufficient, or carbolic acid. The process relieves the itching of the skin, and is very soothing to the patient. So soon as efflorescence is observed on the skin of the neck and arms (as early sometimes as the fourth day), which marks the first liberation of the germ-carriers of the specific disease-poison, the employment of the oil is to begin, and ought to be continued until the patient is well enough to take a warm bath, in which the whole person (scalp included) is well scrubbed, carbolic acid soap (Calvert's or Macdougall's) being abundantly used during the process. These baths are to be repeated every second day, until four have been taken, when, as far as the skin is concerned, the disinfection may be regarded as complete, although a further quarantine of a week may be advisable. (10.) The chamber in which the sick person has been confined must now be thoroughly washed out, using freely carbolic acid and soft or black soap (which may now be got combined for the purpose) (*Brit. Med. Journ.*, 1869, Jan. 9, p. 23).

If a patient be from the outset thus isolated from all who are susceptible of contagion,—if everything proceeding from him is drenched with chemical disinfectants before it leaves the sick-room,—if the exhalations from the skin, and the peeling skin itself, are mechanically imprisoned by inunction with oil until they can be removed by a warm bath,—and if all clothing, bedding, and furniture are disinfected at the close of the illness, a case of scarlet fever ought to remain barren of results. But to carry out such a process thoroughly requires the command of space, of money, and of attendance; and requires also wisdom and self-denial on the part of relatives and friends. If it were possible to begin to-morrow, and to carry it out in every case, scarlet fever would have ceased to exist in the country at the end of two months, and it is possible, or even probable, that it would never return. "When, however, we look abroad at the actual condition of the people among whom the disease works its ravages, we see at once that, with regard to very many of them, and especially with regard to the poor in towns, isolation and disinfection are no more

than idle words. In the class above the very poor, among small tradespeople, small employers, and the like, where the adoption of proper measures, although difficult, would not be impossible, it is rare to find the intelligence and the active conscientiousness that would induce them to bear restraints, to take trouble, and to incur loss, for the sake of preventing injury to their neighbors. Even among the wealthy and educated, disinfection and isolation are but imperfectly carried out. Such people like to do as they please, and resent dictation from medical men. If the cases are severe, mental anxiety and distress break down the barriers of precaution. If they are trivial, strict precaution would too often be thought fussy and unnecessary. Medical men cannot in such cases enforce what is right. They can only recommend it; and they recommend it subject to the remembrance that their business is to heal the sick, not to quarrel with the healthy. It is a curious weakness of human nature, that many otherwise rational creatures are angry at the suggestion that their loved ones can be sources of danger to all around them, or that their house is properly shunned by the neighbors; and beyond this there is the belief, not altogether unfounded, that it is useless to isolate and disinfect in a single case, where there is no reason to believe that a similar course will be generally adopted. In the case of schools and public institutions, it might be well to prevent dispersion by positive enactment. But in other instances, if the principle were once asserted and acted upon, that an infectious disease must be registered, as a matter of public concern, public opinion would do the rest. Such provisions as we have suggested are, perhaps, as much as could be at present carried into effect; and their influence, both sanitary and educational, would be of incalculable value."

There are also beginning to arise some sceptical misgivings regarding our present hygienic views and practice with regard to scarlet fever. "One failure starts a doubt in a believer's mind; a second confirms it; a series of failures makes one look out for a better creed. Are we doing any good with our present preventive means? If they could be universally enforced, as they have been in isolated families with disciplined minds, they would succeed; but when this is attempted with large thickly packed communities, can they be, or have they ever been, successfully enforced? By the imperfect execution of them through the length and breadth of the land, do we increase or lessen the mortality from disease?"

These questions were put by Dr. Davies, of Bristol, who, writing of an epidemic of scarlet fever there in 1875, continues as follows :—"I feel certain that we increase the anxiety of the domestic and social troubles of the public by our preventive measures; and I feel doubtful of the answer to the former question. Take, for example, an imaginary but typical case in private practice. There is a family named X., in easy circumstances. They have five children —three boys and two girls. There is an epidemic, of a very mild type, of scarlet fever in the locality. Hundreds have had the disease; but there has been no death. The season is July; the weather rainy, the atmosphere moist. The youngest boy, aged 4, contracts the disease in the prevalent mild type. The other four children, by the advice of their medical attendant, are sent to a distance, and escape the infection. The sick child recovers. Two years elapse. The eldest son goes to Eton, Rugby, Marlborough, or some other public school. An epidemic of a severe type has just broken out where he is ; he contracts the disease. The parents are telegraphed for to see their son, supposed to be dying. They travel to and fro three hundred miles. The patient ultimately recovers, and escapes only by the skin of his teeth. The school is temporarily broken up. The convalescent is sent to a fashionable watering-place before he is properly disinfected, and there he spreads the disease. The second son has escaped, through being kept at a distance from his brother. He has, in the course of time, taken his degree at college; has been admitted as a barrister; has, after a long struggle, made his position; has been married. He passes through Paris on his honeymoon. The weather is cold, the wind easterly. In Paris an epidemic of scarlet fever prevails. He contracts the disease and dies in a strange land; and leaves his young bride a widow among strangers. In time, the eldest girl is married to a rich man. She is in due time confined of her first-born. The bells are ringing, and all goes on merrily as a 'marriage bell.' A fortnight afterwards, that house is desolate. In that house are now only a bereaved husband and motherless infant; the subtle seeds of this mysterious disease have been inadvertently introduced to the puerperal patient in the nurse's shawl, or on the sleeve of the doctor's coat. I will not follow this case further; but ask, in all seriousness, would not life and suffering have been saved if all the family had been allowed to pass through the disease when it first appeared among them in a mild type,

when they were all children? I wish it to be thoroughly understood that, as a health-officer, I have never had the moral courage to discard my former profession of faith, and to undertake the responsibility of giving practical effect to my doubts. I have never used disinfectants so extensively as during the present epidemic, and yet our failure is complete. The doubts I have expressed do not in any way extend to typhus and enteric fevers, small-pox, and Asiatic cholera. It is a fact beyond contradiction that occasionally this tiger of pathology seems to stalk abroad, having left both claws and teeth at home. Could we not play with him then? Inoculation from mild cases of variola previous to the discovery of vaccination proved of immense benefit. We can import scarlet fever. We can choose our type and season of the year. Is there a milder exanthem of an allied species that can prevent or modify this disease? Rotheln is nearly allied, is very infectious, but harmless. Does it modify scarlet fever, or is it modified by it? I have for some time looked upon it with affection, but am afraid to theorize on the subject. Can any one throw light on this unexplored field? Observation convinces me that there is some unknown condition which gives immunity to some persons from scarlet fever: what is this condition? An analogous condition was known in the Vale of Berkeley regarding small-pox before the days of Jenner, and might have remained unknown to the outer world had not that great man unearthed it. Who will be the Jenner of scarlet fever?" A somewhat similar argument is used by Thomas in his article on scarlatina in Ziemssen's "Cyclopædia," Vol. II., p. 300.

Different prophylactic medicines have been recommended; amongst which belladonna has had the greatest number of advocates, but its value has diminished greatly, as the weight of testimony is against its possessing any prophylactic virtues (Wood). Even when continued for a week, it affords no protection against scarlet fever (Niemeyer).

Scarlatina—*See Scarlet Fever.*

Scorbutus—*See Scurvy.*

Scurvy.—*Definition.*—A morbid state characterized by sponginess of the gums and the occurrence of livid patches under the skin, of considerable extent, which are usually harder to the touch than the surrounding tissue. An altered state of the albumen of the blood is associated with this condition, and the phenomena are brought about by a deficient

supply of the organic vegetable acids, or of the salts of fresh vegetables. It is ushered in by debility, lassitude, lowness of spirits, attended by fetor of the breath, and the gums swell by irritation, till they overhang the teeth in palmated excrescences. The livid subcutaneous patches and spots appear upon the skin of considerable extent, especially on the lower extremities and among the roots of the hair. Spontaneous hæmorrhages may take place from the mucous canals; contractions of the muscles and tendons of the limbs occur, with pains, and sometimes superficial ulcerations.

Treatment.—The disease, "so fatal when left to itself, is cured with the greatest facility. Symptoms apparently the most grave and serious vanish as if by magic, and without leaving behind them any serious injury to the constitution. The sanious discharge from scorbutic sores has been known to change color, and to become healthy in a few hours after the commencement of treatment. In pure cases of scurvy the blood, and the blood only, is at fault," (Parkes) "Lemon juice," writes Dr. Watson, "is really a specific against scurvy, whether it be employed as a preventive or as a remedy. It supplies something to the blood which is essential to its healthy properties." The potato seems to be no less efficacious as a remedy and preventive (Budd), and all the antiscorbutic remedies are most efficient in the form of juice—from raw and uncooked fruit. The reader will find a most interesting account of the efficacy of potatoes and of onions in Dana's *Two Years before the Mast*—a book well worth reading. The antiscorbutic principle, whatever it may be, is in greatest amount in unripe fruits; it lessens gradually as they ripen; and if the juice be obtained, the principle disappears, or is decomposed and rendered inefficient, when fermentation occurs. When lime-juice becomes musty, a mucilaginous principle is developed at the expense of the citric and malic acids; and the percentage of citric acid gradually decreases (Sir William Burnett, Parkes). Good lemon juice seems to be more effectual, however, than pure citric acid; probably from its containing malic and tartaric acids besides citric, and from the citric acid being in the form most easily absorbed and decomposed by the digestive organs of man. The Materia Medica gives numerous analogous examples of the superior efficacy of a medicine in its natural combinations (Parkes). This is all we can yet say, however, regarding the actions of either of these means of cure, notwithstanding the researches of the chemists of the pres-

ent day. Moreover, it is sufficient; and with such remedies at command, the prevalency of scurvy in merchant vessels, or in any navy, ought not to exist. "The one thing wanted in order that scurvy should be entirely banished from the mercantile marine is proper provision for the dietary of the crew,—such provision as is enforced in emigrant ships, where each person's weekly allowance must have in it at least 8 oz. of preserved potatoes, and 3 oz. of other preserved vegetables (carrots, onions, turnips, celery, and mint), besides pickles and 3 oz. of lime-juice; where, also, there is considerable variety of bread stuff; and where, on two days in the week, preserved (not salted) meats must be given. With such a dietary as this, the details of which might be varied, provided its principle were adhered to, the occurrence of scurvy would be impossible. And even with dietaries inferior to that just described, scurvy would not occur as it does, if but the provisions of the 'Merchant Shipping Act' (17 and 18 Vic., c. 104) were obeyed,—that whenever a crew shall have been consuming salt provisions for ten days, lime juice or lemon juice and sugar shall be served out at the rate of half an ounce each per day; and if, during the voyage, the opportunities which offer themselves were fairly used for getting new supplies of fresh animal and vegetable food; but owners disobey the law, and captains neglect opportunities to counteract the results of this disobedience. Owners, notwithstanding the law, will send forth their ships on long voyages without any provision of lime-juice, or with lime-juice insufficient in quantity, or with lime-juice of which the quality is bad; and captains, with half their crews more or less disabled, are known to run past St. Helena or the Western Isles, when a few hours' delay would obtain sufficient provisions to repair the mischief occasioned by first neglect" (Simon and Barnes's *Sixth Report on Public Health*, 1864, p. 20). It is perhaps hardly fair to attribute the improved health of the navy entirely to the introduction of a daily allowance of lemon juice, considering that the quantity of the diet was greatly increased, and its quality greatly improved, contemporaneously with this addition. It is gratifying, however, to see how largely these combined measures have improved the health of the navy, and rewarded the cares of those who superintend it. During the nine years preceding these changes the sick seamen sent to the hospitals were 1 in 3.9, while in the nine succeeding years the proportion was only 1 in 8.4; so that not only has scurvy almost disappeared from ships

of war and naval hospitals, but the efficiency of the navy has actually been increased threefold.

Dr. Parkes advises that the following measures be adopted in time of war, or in prolouged sojourn on board ship, or at stations where fresh vegetables are scarce: "(1.) The supply of fresh vegetables by all means in our power. Even unripe fruits are better than none, and we must risk a little diarrhœa for the sake of their antiscorbutic properties. In time of war every vegetable should be used which it is safe to use, and when made into soups all are tolerably pleasant to eat. (2.) The supply of dried vegetables, especially potatoes, cabbages, and cauliflowers; turnips, parsnips, &c., are perhaps less useful; dried peas and beans are useless. As a matter of precaution these dried vegetables should be issued early in the campaign, but should never supersede the fresh vegetables. (3.) Good lemon juice should be issued daily (1 oz.) and it should be seen that the men take it. (4.) Vinegar (½ oz. to 1 oz. daily) should be issued with the rations, and used in the cooking. (5.) Citrates, tartrates, lactates, and malates of potash, should be issued in bulk, and used as drinks, or added to the food. The easiest mode of issuing these salts would be to have packets containing enough for one mess of twelve men, and to instruct the men how important it is to place them in the soups or stews. Possibly they might be mixed with the salt, and issued merely as salt" ("Prac. Hygiene," 2nd Ed., 1866, p. 466).

Our recent Arctic expedition, in 1876, is of interest for two reasons: (1.) As regards a peculiar theory as to the action of lime-juice which the commander of that expedition entertained and acted upon, based as it was upon a groundless and absurd hypothesis, that by doubling the dose of lime-juice for a month he believed he could, so to speak, "saturate" his men with it before they started on an important sledging expedition, so that they might be able to do without it on these journeys. Lime-juice is simply an article of diet; and is no more "cumulative" in its action than any other aliment which goes to nourish the body. Its nutritive influence continues for so long and no longer than the time when it is continued and assimilated as an article of diet. The assumption of the theory was entirely gratuitous and unfounded; and to have acted upon it against competent medical opinion was unjustifiable. (2.) Another theory was entertained to palliate the omission of lime-juice from the sledging rations, namely:—that lime-juice when exposed to

an extreme degree of cold deteriorates and ceases to have any antiscorbutic properties.

"This theory was not only disproved by the evidence of the medical officers on other sledging expeditions, but was effectually answered by the fact that the whole expedition was virtually saved from the most fearful mortality from scurvy by the opportune discovery of a depot of lime-juice left five years before by the "Polaris" expedition, lying in a cask on the ice exposed to the extremity of cold alternating with heat. It had also been much weather-beaten, and on its surface mixed with snow; but it nevertheless proved to be in no respect deteriorated in its antiscorbutic powers, and served to keep off the last extremities of disease from the sledging parties to whose relief it was sent in time. It appears, indeed, to us, and it will appear, we think, to any one who reads the whole narrative, that, but for the timely discovery of this depot of the "Polaris" lime-juice, and its utilization for the sledging parties, there is good reason to fear that so large a proportion of the crews would have been destroyed by scurvy, that it is doubtful whether the whole expedition would not have been lost from the want of sufficient power to bring the ships out of the ice. However this may be, the frozen lime-juice rendered the most essential services, and the theory that freezing destroys its virtues is most effectually disposed of" (*Brit. Med. Journal*, March 10, 1877).

In fact there is nothing in the history of our latest Arctic expedition of 1876, which does not point to the cause of the outbreak of scurvy as similar to all those which history has already recorded; and which will again produce the disease if the teachings of history are similarly neglected and set aside.

The great body of evidence taken by the committee appointed to inquire into the causes of the outbreak of scurvy in the Arctic expedition fully shows that "the outbreak was due essentially to the omission—or, rather, to the refusal—of Captain Nares to send lime-juice with the sledge parties. It was shown that the provisions of the ships were ample in quantity and excellent in quality; and, further, the committee having had before them the preliminary memorandum by Sir Alexander Armstrong, the Director-General of the Medical Department of the Navy, strongly and explicitly requiring the issue of a daily ration of lime-juice, and having heard Sir George Nares' explanation of the reasons which

induced him to act in defiance of that memorandum, decided that in doing so he made himself responsible for the outbreak of scurvy which occurred, and that he had no sufficient reason for not carrying out the rules laid down in the memorandum."

"It is a satisfaction to find that throughout the whole of this inquiry the Medical Department of the Navy comes out with the utmost possible credit. Nothing could be more clear, more explicit, more absolutely prophetic than the memorandum which was furnished to Sir George Nares by the Admiralty from Sir Alexander Armstrong, on the immeasurable importance of supplying the men with a daily ration of lime-juice. The whole of his direction for the maintenance of the health of the men are indeed most able, practical, and judicious: and, had they been strictly followed out, the results would have been very different. The conduct of all the medical officers of the expedition appears to have been such as to merit and to receive the warmest approbation of their superiors from first to last, and they showed a devotion to duty which is entirely comparable with that displayed by the officers and men of this gallant expedition generally. They can seek for no higher praise, and it is on all hands conceded that they merit no less. One moral of this inquiry, which is salient on the face of it, and which we can hardly be expected to abstain from pointing, is, that combatant officers will do well always to respect the functions of the medical officers, and to attribute just weight to medical recommendations. In framing false medical theories, and in assuming the responsibility of refusing to act upon his medical instructions, Sir George Nares brought a great disaster upon this expedition; and he assumed the full responsibility of it" (*Brit. Med. Journal*, March 10, 1877.)

Scrivener's Palsy.—*Definition.*—Morbid excitement of the motor fibres of the nerves of the muscles of the fingers and thumb holding the pen, resulting in cramps, so as completely to prevent writing, and thus the condition becomes equivalent to a local palsy or paralysis.

Treatment.—Complete rest from the usual mechanical use of the hand must be insisted on. Nourishing food, with a milk diet in abundance, or cod-liver-oil, are essential. In one case division of the muscle in which the cramp seemed first to commence had a good effect (Stromeyer). In fourteen days after subcutaneous section of the long flexor of the thumb, the patient was again able to write. Dieffenbach

often repeated a similar operation, but without success. These may be regarded as very radical surgical methods of securing absolute rest to the wearied muscles. Mr. Solly, in his lately published surgical experiences, described several cases of this peculiar affection, in which tonic treatment, with rest from writing, was attended with good results. Niemeyer has been successful with the galvanic current. He applied the current to the muscles of the thumb and index finger. Exercise of the affected muscles materially tends to increase the disease.

As to medicines, when the disease has not gone beyond the sensation of heat and cramps in the ball of the thumb, I have seen good results from the syrup of the phosphates of iron, quinine, and strychnia; and generally those remedies noticed under the subject of anæmia may be prescribed. Mechanical appliances, such as contrivances which fill up, as by a ball, the palm of the hand on which the fingers rest in writing, have been of service; and there are also appliances by which writing may be accomplished without the aid of the fingers, and which therefore may be of service in securing rest to them.

Scrofula.—*Definition.*—A constitutional disease, resulting in the deposit of a soft unorganized matter of a white or pale-yellow color, firm, resembling curd or soft new cheese, but less tough, sometimes granular and friable, and consisting of a large proportion of albuminous matter. It is often found mixed with purulent-like fluid, or occurring in rounded masses of different degrees of firmness, and varying in bulk from that of a millet-seed to a hen's egg or larger; sometimes contained within natural canals and cavities of the body, and sometimes inclosed in cysts, or occasionally diffused as if by infiltration through the texture of a part. To the rounded masses the name of tubercle has been given; and the substance itself has been named scrofulous or tuberculous matter. Scrofula also expresses itself in specific forms of inflammation or ulceration. It manifests a remarkable tendency to certain specific forms of nutritive disorder, which are strikingly wasting in their effects upon the body, namely:—(a.) Scrofula with tubercle; (b.) scrofula without tubercle; and (c.) certain local scrofulous affections, such as eruptions of a peculiar kind, many cutaneous ulcers, certain enlargements of the joints, tubercular meningitis, hydrocephalus, scrofulous ophthalmia, tubercular pericarditis, scrofulous diseases of glands, phthisis pulmonalis or pul-

monary consumption, acute miliary tuberculosis, tabes mesenterica, and tubercular peritonitis.

Treatment.—(a.) *Preventive*—There is perhaps no subject in the whole range of medical science which the student ought to study more carefully than the cachexia, or special form of ill health associated with the occurrence of tubercle and scrofulous affections as here described. As a practitioner he will find that he becomes often painfully concerned in the deepest interests of families and society, through the threatened or actual ravages of scrofulous diseases. The extensive prevalence of the scrofulous cachexia—the great and almost inevitable mortality of the scrofulous diseases themselves when completely developed, stamp the morbid state associated with them as a topic which, at the outset of the student's career, ought to engage a large share of his study. Most assuredly the physician will have to turn his knowledge of the pathology of scrofula to account in every phase of his professional life. When he fully appreciates what experience has adequately demonstrated, that the scrofulous cachexia springs from causes over which the public (rather than the medical profession) have control, he must be at once impressed with the belief and encouraged with the hope, that when he acquires the confidence of families in the practice of his profession he may exercise a powerful influence for good in teaching how much the public may control the ravages of scrofula and consumption by prudent marriages, by sanitary attention to offspring, and by the necessity of free ventilation and of fresh air in dwellings. There are several circumstances which show the great influence of public sanitary measures in controlling the development of scrofula, when these measures are scientifically directed to the preservation of general health, especially where men are associated together in great communities—an influence much greater than the best directed efforts of the medical profession can establish through their materia medica. It is by the mode of life as citizens of the world, in the social relations of husbands and wives, parents and children; in the public relation of masters and workmen, that the extent and ravages of consumption and scrofula are to be controlled. It is by a strict attention to the rearing of offspring, and in the subsequent regulation of food, clothing, cleanliness, and occupation; in the choice of a profession, and by many other circumstances which have an obvious influence (perhaps at first sight inappreciable) on the main-

tenance of the general health, that our hopes of success as practitioners of medicine must rest in the prevention of that bad habit of body which develops and propagates the scrofulous diseases in civilized society.

(*b.*) *General Treatment.*—The general treatment now in most repute is founded on the doctrines — (1.) That scrofulous local lesions will heal of themselves if the nutrition of the system can be maintained and the continuous growth of tubercle arrested; (2.) that the periods of frequent temporary arrest of all the general and local symptoms of disease ought to be diligently taken advantage of to improve and preserve health by hygienic means (3.) that the efforts of the practitioner should be directed to the digestive rather than to the pulmonary system; (4.) that the kind of morbid nutrition in the body generally, and altered morphological change in the tissues of the organ where the deposit takes place, appear to be chiefly due to excess of albuminous and deficiency of fatty elements in the chyle. The treatment, therefore, to be pursued must be essentially reparative of the waste of tissue generally; corrective of what has been unfit in the individual diet and mode of life; and, lastly, supplementary of the elements of nutrition which have been deficient. During the past thirty years in Germany, and twenty-three years in this country, the treatment of scrofulous affections has gradually but steadily become more and more firmly based on those pathological doctrines which the late Dr. J. H. Bennett, of Edinburgh, was mainly instrumental in first elucidating, and in earnestly recommending to the notice of the profession generally in this country. The view here taken regarding the nature of scrofula leads to the belief that—(1.) The blood is impoverished through the preliminary dyspepsia which precedes the growth of crude tubercle; (2.) that in pulmonary phthisis the growth of crude tubercle results in a consolidation primarily in the air vesicles; (3.) that the successive formation and softening of these crude tubercles lead to ulcerations of the pulmonary and other tissues—to the infective processes which set up the growth of true miliary tubercle—and, promotes wasting of the body generally.

It has been now fully shown, especially by the observations of Dr. Bennett, in the first instance, confirmed by the extensive experience of the physicians at the Brompton Hospital for Consumption, in London, that such treatment as is

directed to remove the malassimilation of food frequently checks the tendency to the repeated occurrence of tubercles, while those which previously existed remain harmless ; that general symptoms and physical signs may disappear completely ; and that even extensive excavations in the pulmonary tissue may heal up and cicatrize. According to the testimony of Dr. Wood, of Pennsylvania, the fatal results have not only been postponed, but the death-rate from phthisis has diminished in the principal cities of the United States since such principles of treatment have been adopted. The indications of general treatment are therefore:—(1.) To improve the faulty nutrition, which is the cause of the scrofulous cachexia, and of the exudations assuming the characters of tubercle ; (2.) To subdue the fever which attends the growth and changes going on in the tubercle-nodules, and to favor the absorption either of the entire exudation, or of such portions of it, that what remains may undergo such changes as are consistent with its future harmless existence in the organs or other parts where it may have grown ; (3.) To prevent the recurrence of fresh exudation by careful attention to hygienic regulations, especially during the intervals of apparent return to health.

To fulfil the first of these indications it is of all things important that fatty matter be assimilated in large quantities, and it appears that such is most readily absorbed and assimilated when in the fluid condition. The substance of all others found most beneficial has been cod-liver oil. At the Brompton Hospital more than 600 gallons of this oil are used annually. There, on a great scale, its merits have been tested and compared with the effect of treatment conducted on general principles, and irrespective of its use. The result has been to confirm, in the estimation of the medical profession, the great value of the remedy in the treatment of phthisis, when appropriately administered, and combined with the use of such other measures as any special circumstances in the individual patient may require (Thomson). The general opinion of the profession with regard to cod-liver oil may be summed up in the statement originally made by Dr. Bennett,—namely, that "it rapidly restores the exhausted powers of the patient, improves the nutritive functions generally, and stops or diminishes the emaciation. The night perspirations subside, the cough is quieted, and the expectoration is diminished after the oil has been used for a few weeks. A very constant and well-marked favorable

change under its use is to be noticed in the diminution of the pulse, which gradually but steadily has been observed to come down at the rate of five or six beats weekly; and during the same period the weight of the body has been known steadily to increase at the rate of half a pound to a pound. In females it is a significant and highly favorable symptom when the catamenia return after the oil has been used for some time. The usual dose adopted by the late Dr. Thompson, at the Brompton Hospital, is one or two teaspoonfuls twice a day at first, and gradually increasing the quantity to half an ounce three times a day. Dr. Bennett recommends somewhat larger doses—namely, for an adult, a tablespoonful three times a day, which may often be increased to four or even six with advantage. When the stomach is irritable, however, a tea or a dessert-spoonful is enough to commence with. It appears from the observations of Dr. Thompson that no additional advantage is obtained by pushing the oil beyond the limits of the doses adopted by him at the Brompton Hospital, from the fact that where its use has most obviously increased the weight of the body, to the extent in one instance of a pound per week for twenty-one weeks, only three pints had been taken during that time. The kind of oil used, as far as coarseness or fineness is concerned, seems not to affect the beneficial result in any material degree. Some patients even prefer the coarse to the fine oil. The experience of some is, moreover, favorable to combining the oil with liquor potassæ as an emulsion; and as it appears that undue acidity prevails as well in the stomach as in the intestinal canal, the addition of the alkali ought, on theoretical grounds, to be advantageous. It seems also that, when cod-liver oil was first used as a medicine, more than fifty years ago, in the treatment of rheumatism, it was then ordinarily combined with an alkali. It may be taken, however, unmixed, or it may be floated on milk, or nitro-muriatic acid mixtures, or on lemonade, soda-water, lemon juice, or on a saline draught during effervescence, when such combinations are suited to the patient. Creosote has been recommended to be added, as it is said to render the stomach more tolerant of the remedy. The following formula, quoted from Dr. Thompson's "Clinical Lectures on Pulmonary Consumption," yields a palatable mixture, which ought to be combined as an emulsion:—

"An ounce and a half of cod-liver oil, four drops of creosote, two drachms of compound tragacanth powder, and four

ounces and a half of aniseed water. Of this mixture an ounce may be taken thrice daily."

Besides cod-liver oil, other animal fats and oils, where they can be taken and assimilated, are sure to be followed with benefit. Hence milk rich in fatty matter, such as asses' milk, and milk drawn from the cows at a short interval after the greater part of their milk has been withdrawn, and which is known in Scotland as "afterings," are found to be followed by improvement where they are persevered in and are assimilated. So also has it been with cream and butter. Dr. Bennett instances the partial success occasionally of caviare, bacon, pork, mutton chops, and the marrow of the bones of oxen; while Dr. Thompson instances the good effects he has obtained from the use of oil obtained from the foot of the young heifer (neat's-foot oil). The administration of any of these remedies is quite consistent with doctrines now taught regarding the pathology of scrofula, and it is useful to know their individual value, in order that in particular cases one may fall back upon their use where a change may be desirable.

It has been considered that some of the good effects of cod-liver oil may be due to the biliary elements with which it has been incorporated. This view is not supported by the experiment of adding ox-gall to other animal oils not derived from livers, as no beneficial results have been observed to follow. But as the active principle of the gastric juice has been now successfully isolated by chemistry, and has been successfully used to aid the digestion of food in the stomach, might not some principle be obtained from the liver which might aid the assimilation of fatty substances when mixed with the intestinal juices?

In fulfilment of the second indication mentioned the propriety of abstracting blood has been much discussed. It has been already seen that febrile symptoms of a very severe kind sometimes attend the exudation and consolidation of crude tubercle. It is also a more or less frequent clinical observation that pneumonia, bronchitis, and pleuritis, in acute or chronic forms, are intercurrent attendants on the deposit and future changes of tubercles in the lungs. "Hence," as Dr. Bennett justly observes, "there are all kinds of intermediate changes between the simple and tubercular exudations constantly going on in the progress of a case of pulmonary tuberculosis. The phenomena of phthisis, pneumonia, pleurisy, and bronchitis, in their acute or chronic forms, may appear together, and be inextricably mingled, or

they may succeed each other at intervals." Thus, scrofulosis, both as a constitutional and as a local disease, is scarcely ever free from exacerbations, the various local and constitutional states acting and re-acting on each other. While, therefore, on the one hand, the system requires an increased and well-directed supply of nutritive materials, on the other hand, there are constitutional states of excitement, depending on local irritation, which require to be subdued, and which may even demand antiphlogistic treatment. Whatever theoretical view may be taken as to how the exudation may most readily be absorbed, all physicians are now at one as to the propriety of preserving the general strength, of effecting elimination of effete material, and of meeting antiphlogistic indications rather by diaphoretics, diuretics, emetics, and purgatives, than by abstracting any considerable amount of blood, either at once or at repeated intervals. In fact it is now observed that the administration of appropriate diet, and abstinence from lowering remedies, with cod-liver oil, while they correct the general nutrition, may be so regulated as to subdue the constitutional irritation by a perseverance in their use for a period of not less than four or six weeks.

In fulfilling the third indication, the real power of the science of medicine may be demonstrated. It is by well-directed hygienic measures, successfully and efficiently carried out, that the real strength of the physician may be put forth to prevent the recurrence of fresh exudation; and his hygienic exertions towards the patient are to be redoubled during the temporary intervals of apparent return to health. It is now almost an axiomatic truth, that of all things which deteriorate the constitution on the one hand, and influence pulmonary congestion on the other, none are so detrimental as impure and deficient air, together with frequent variations of temperature, and changes from sudden heat to chilling cold. These latter vicissitudes may be considered characteristic of the physical climate of Great Britain and Ireland. "The conditions of preventive treatment which have seemed most useful are nutritious food and proportionate great exercise in the free and open air. So important has this last condition proved to be, that it would appear that even considerable exposure to the weather is better than keeping phthisical patients in close rooms, provided there be no bronchitis or tendency to pneumonia or pleurisy" (Parkes, p. 445). Tonic treatment consists essentially in the adoption of those means which promote or stimulate the healthy nutrition of

the body. Its elements exist in fresh air, abundant exercise, sufficient repose, and judicious diet. A hygienic code applicable to the tuberculous cachexia has been recently laid down by Dr. B. W. Richardson, in the second volume of the *Sanitary Review*, and very recently in a special work On the Hygienic Treatment of Pulmonary Consumption. It is derived from these elements of tonic treatment; and as it puts well-known truths, too little appreciated, in a formal and more important aspect than is wont, its precepts are here quoted.

I. *A supply of pure and fresh air for respiration in constantly required by the tuberculous patient.*—As it is known that if one per cent. of carbonic acid exist in a room, the air is unfit for a healthy person, it is therefore much more so for a consumptive one. The temperature of a room ought to be equally maintained at from 55° to 56° Fahr., ventilation and heating being effected by open fireplaces. A single room ought not to perform the two offices of a bed-room and a sitting-room. The sleeping-room ought not to afford less than 1,000 feet of space; and if larger, so much the more healthful will it be. In connection with these statements, while it is objected, for obvious reasons, with much justice, to the treatment of tuberculous patients in special hospitals, there is much on the other hand that might be improved in all our hospitals, with reference to the arrangement of the patients, to secure to them fresher air than they generally obtain. "Constant though imperceptible movement of the air is the point to be attended to"—*i. e.*, thorough ventilation. All who are able to be out of bed ought to have their meals in a common room, which is not used for any other purpose, and is apart from the wards or dormitories.

II. *Active excercise in the open air is imperatively demanded by the tuberculous patient.*—In the words of Dr. Jackson, "He must be made to feel that the risk is in staying in the house, and not in going out of it." But the skin must be perfectly protected; and while a chill, or inclement weather, is to be avoided, the patient must go out in all seasons, without being too fastidious about the weather, walking exercise being persvered in as much as possible. "The best climates for phthisis are perhaps not necessarily the equable ones, but those which permit the greatest number of hours to be passed out of the house" (Parkes). Next to diet, exercise in the open air is, of all things, the most important: it should be carried as far as the vigor of the patient will permit. It should not be done rashly, but boldly;

and, if possible, the patient ought to have faith in it; for without this he is not likely to pursue it so far as he can, and then he will not derive from it all the benefit which it can afford (Jackson). It is very important to remember, in regard to training animals and young persons, that they have much more extent and range of lung than are required in the quiet everyday pursuits of life. Less lung is used when the young person or other animal lies down or sleeps, or is depressed; and, on the contrary, walking, running, wrestling, the force of the passions, each or all of them bring the greatest amount of lung into action or use. In short, the amount of lung in use is an ever-varying quantity; and just as much lung may come to be used as a habit as the listlessness or vigor of the individual moment requires. There is every range, every variety, till the top of the wind, the top of the speed (the full vital capacity) is attained (Sibson) Practically, therefore, the more fully the lungs are judiciously used, the more is their capacity nursed; and, conversely, the less they are used and expanded, the more useless they are likely to become, if not absolutely diseased. Under a judicious system of training, an undeveloped man, even although he may be feeble, narrow-chested, and sickly, may yet become active, full-chested, and healthy. We have numerous examples of this among the boys in our training ships for seamen. The over-fed, short-winded pugilist, rower, or cricketer, may in a few weeks be changed, by training alone, to the firm-fleshed, clear-skinned, long-winded winner of the boxing fight, the foot race, or the rowing match. It is this want of use that probably renders the apices of the lungs more liable to the growth of tubercle in them than in any other part of their substance. It is a portion of the lungs which has less play or expansion than any other portion, and is apt to be bound down by the surrounding parts. The apices are, therefore, the parts most likely to remain in a quiescent state of non-expansion, especially when acts of respiration are inadequately performed, either owing to the constrained position of the body in certain trades, or from habitual stooping of the body from listlessness of habit or want of vigor in the system. This quiescent state of the air-cells is favorable to the growth of tubercle; and thus the apices of the lungs are the most common seat of tuberculous growths (Reviewer in *Medical Mirror*, Vol. I., p. 638). The effects of want of exercise and of impure air are thus most potent agencies in causing phthisis.

"The much greater prevalence of phthisis in most of the European armies (French, Prussian, Russian, Belgian, and English) can scarcely be accounted for in any other way than by supposing the vitiated atmosphere of the barrack-room to be in fault." In all the places where phthisis has prevailed, in the most varied stations of the army, in the most beautiful climates, the only common condition was the vitiated atmosphere which our barrack system everywhere produced; "and, as if to clench the argument, there has been of late years a most decided decline in phthisical cases in these stations, while the only circumstance which has notably changed in the time has been the condition of the air" (Parkes, p. 91). Indeed, the air is rendered so so impure by respiration, that while an atmosphere so vitiated has a most injurious effect upon the health, contamination of the air has been so great, where lung diseases abound, as to give rise to the idea that phthisis appeared to be propagated by contagion (Bryson, Parkes). It is therefore within the power of the authorities of the Army and Navy so to direct the physical training of young persons, that the apparently sickly and the short-winded may in time be developed into the wiry and active young man, long in wind, sound in body, and lithe of limb—a result which, however, can only be attained by judicious feeding, careful exercise throughout the development of the body, and by the gradual nursing of the breathing powers. The opposite of this is seen in the breaking down of recruits at a very early period of service in the army—within the third year—a result likely to be greatly obviated by the gymnasia introduced by Government for the physical training of recruits before and after they are instructed in drill, by better and more abundant food, and improved barracks. The Austrian runners also furnish instances of breaking down by over-exertion in running at ages unsuited for their strength. They seldom live above three or four years, and gradually die of consumption (Remains of Mrs. Trench, p. 72). In all physical training the condition of the heart must be considered not less than the lungs, seeing that its movements respond to the movements of the chest and the lungs. They are members of one great system; and in nursing one we nurse the other; for by giving tone and health to one we must give tone and strength to the other (Sibson). If, on the contrary, the development and gradual training of the lungs are not successful, the lesions which become developed are of a peculiar character, and are apt to

be thought very lightly of; because, in the first instance, they are so little capable of appreciation by a single observation; and, secondly, because the lesions are insidious, and take some time before they reach a stage to be apparent.

III. *It is important to secure for the patient a uniform, sheltered, temperate, and mild climate to live in, with a temperature about* 60° *and a range of not more than* 10° *or* 15°; *where also the soil is dry, and the drinking-water pure and not hard.*—The classic work of reference on this topic is that by the late Sir James Clark. If it is possible to give a practical abstract of his extensive and valuable experience, it may be done somewhat as follows:—(1.) After the functions of the digestive organs and skin have been re-established in improved action, the patient who labors under a tuberculous cachexia may derive benefit by a residence in a mild or temperate climate (such as has been defined), conforming to all the hygienic and medicinal treatment already mentioned. (2.) When symptoms, however slight, indicate that tuberculous deposit has located itself in the lung, removal to a mild climate, especially if effected by a sea voyage, under favorable circumstances, may still be useful as a means of improving general health, of lessening the chance of intercurrent inflammatory affections of the pulmonary organs, and even of arresting the further progress of the disease. The nausea, squeamishness, or even sickness, which with some are always more or less associated with a sea voyage, are beneficial to cases of incipient tuberculosis. The effects of such nausea tend to increase the natural secretion and elimination from the pulmonary mucous membrane; so that minute portions of tubercular exudation, commencing to consolidate in the air-vesicles, are effectually, gradually, and gently passed out with the motion of the pulmonary mucus in the expectoration. The sensation of nausea tends to subdue any local vascular irritation; and the unceasing motion of a sailing vessel tends to keep up a constant exercise which is advantageous to the patient. (3.) When extensive tuberculous disease exists in the lungs, little benefit is to be expected from a change of climate; and a long journey will most certainly increase the sufferings of the patient, and hurry on a fatal termination. (4.) There are cases, however, of chronic consumption which may derive benefit from residence in a mild climate,—namely, cases in which the deposit is limited to a small portion of the lungs, and little systemic irritation prevails or in cases in which the disease has ceased

to extend to the lungs, but where a long time is required to complete repair.

IV. *The dress of the scrofulous patient ought to be of such a kind as to equalize and retain the temperature of the body.*—Under this topic waterproof coats, boots, and shoes are to be condemned. Flannel ought invariably to be worn next the skin in all seasons; and in winter a chamois leather vest may be required over the flannel.

V. *The hours of rest should extend from sunset to sunrise.*

VI. *Indoor or sedentary occupation must be suspended; but outdoor employment in the fresh air, even in the midst of snow, has been and may be advantageous.*

VII. *Cleanliness of body is a special point to be attended to in the hygienic treatment of tuberculosis.*

VIII. *Marriage of consumptive females, for the sake of arresting the disease by pregnancy, is morally wrong and physically mischievous.*

IX. *The medicinal treatment must be adapted to the site of the local scrofulous deposits and the general nature of the particular case.*—Iron and iodine in various forms are the most useful remedies; but medicine is utterly powerless and useless unless the hygienic means now insisted upon are carried out to the utmost.

(*c.*) *Medicinal Treatment.*—When medicine is required to move the bowels, as it often is, nothing serves so well as powders of rhubarb, soda, and calumba, taken three times daily, or morning and evening only, or an hour before food. Mercury in any form is not borne by scrofulous patients. Lime-water to the extent of half an ounce taken with milk, three or four times a day, is of marked benefit in those cases of long standing where gland after gland becomes the seat of abscess and ulcer (Shapter). The muriate of barytes, next to iodine, exerts the most decided influence over scrofula. It increases the appetite and the secretions (Adair, Crawford, Phillips). The whole class of tonic remedies are of essential service; such as, small doses of quinine with conium; iron in all its most digestible forms (see under anæmia). The employment of acids is often also called for, especially if perspirations become excessive. A useful formula consists of:

Acid Hydrocyan. dil. ℥ i., glycerine ℥ ii.; acid nitric. dil. ℥ iii., Infus quassiæ ad ℥ xiiiss—a tablespoonful for a dose.

But of all remedies iodine and its compounds are the most valuable in scrofula. The following formula is that which Dr. Shapter has found most useful:

℞. Iodine gr. x.; potassæ hydriodatis gr. xx., aquæ ℥ ii. From 8 to 12 minims are to be dropped into a glass of water and taken three or four times a day by an adult.

It improves appetite and the complexion; subdues the general symptoms, and promotes absorption of the scrofulous glandular swelling. Iodism or iodic saturation must, however, be very carefully guarded against.

Small-pox.—*Definition.*—Small-pox in man is the product of a specific and palpable morbid poison, which is reproduced and multiplied during the course of the malady. It is contained in the contents of the pustules, and in the cutaneous and pulmonary excreta of small-pox patients. After a definite period of incubation (of about seven to nine days, in cases of inoculated, and from ten to thirteen days by ordinary infection) a remitted fever is established, and followed by an eruption on the skin on the third day of the fever after forty-eight hours' illness, and sometimes on the mucous surfaces. The eruption on the skin passes through the stages of papule, vesicle, pustule, scab, and leaves marks or cicatrices on its site. The disease runs a definite course, and, as a rule, exhausts the susceptibility of the constitution to another attack.

Treatment.—Since the first accounts by the Arabian physicians of the ravages of small-pox in Mecca, the history of this disease may be considered in three great eras, each of which is characterized by remarkable epochs, and a fourth may be said to be running its course now. The first of these eras is marked by a commencing epoch of improvement in the treatment of small-pox. In few diseases has medical opinion undergone a more obviously beneficial change, and to Sydenham is due the merit of this revolution in medical practice. The epoch of the second era is marked by the discovery of the singular and beneficial phenomenon that the virulence of the poison of small-pox was greatly mitigated by introducing or engrafting the disease into the system, through the cutaneous tissue, thereby causing the transference of the disease from one person to another, by inoculation. To Lady Mary Wortley Montague is due the merit of having introduced the practice of inoculation into this country in 1722—a deed which must be considered as one of great heroism, when measured by the knowledge possessed by the physicians of those days. The third great era in the history of small-pox is marked by the epoch of that remarkable discovery which has rendered the name of Jenner im-

mortal—namely, the modifying and protecting influence of vaccination. He found that a certain disease in the cow, known as the cow pox, could be transferred to the human subject by inoculation ; and that, having been so transferred, it modified, to a considerable extent at least, the course of the disease, if it did not altogether prevent in the human subject the occurrence of small-pox in its natural state. A fourth era may be said to have commenced in this country almost imperceptibly. It may be described as marked by an epoch of transition, in which doubt and scepticism have arisen as to the efficacy of vaccination ; tending to propagate an erroneous popular belief ; and consequently, leading to the ineffective adoption of means which practically have been proved to be sanative in the highest degree. In other countries, on the contrary, and especially in Central Europe, this present period is marked by implicit faith in the virtues of vaccination, and the successful legal enforcement of this sanative measure. The most plausible objections to vaccination must now give way before the one great fact that, during the last century, one-tenth of the population died of small-pox, while another tenth were disfigured for life by the disease ; and that since the introduction of vaccination, the general mortality from all diseases is less, and that of small-pox is reduced to a minimum.

An account of the treatment of small-pox resolves itself, therefore, into a consideration of two topics, namely,—(1.) The usual therapeutic, curative, or sanative treatment of the disease ; (2.) The sanitary treatment—*i. e.*, the means of protecting individuals from the small-pox ; or of modifying the influence of the malady by inoculation or by vaccination. Of these in their order,—

I. *Therapeutic, Curative, or Sanative Treatment of Small-Pox.*—The main object, in the first instance, is to prevent, if possible, a copious eruption ; for the severity and danger of the disorder may be measured, in some degree, by this. The vulgar belief, that "better out than in," does not apply in the case of small-pox. The great object is to reserve the strength of the patient ; and the attentions of an experienced nurse are demanded. A third indication is to watch for and deal vigorously with intercurrent inflammatory action, which is apt to be set up. It has hitherto been the belief and orthodox teaching, that the disease is not under the influence of any specific or antidote ; that there is no remedy which will cut short the disease ; that it must run its course ; and

that it is the business of the physician to assuage the untoward symptoms and avert the dangerous accidents which may arise, by all the most approved methods of treatment, in accordance with the science of medicine of the present day. That there are grounds for modifying this belief and dogmatic teaching, the following statements will show :— The chief physician of Iceland, Dr. J. Hjaltenin, believes that it may be stamped out by the action of sulphurous acid gas; and relates how, in its malignant form, it was so treated, and stamped out of that island without a single person of the inhabitants becoming infected. The disease was imported into Iceland by French fishing vessels coming into the harbor of Reykjavik, to ask for medical aid; having on board men sick of small-pox. Vaccination and revaccination were immediately instituted; and government at once erected a quarantine hospital, to which the cases were taken from the ships. The epidemic showed a high degree of malignancy; and Dr. Hajaltelin, being a firm believer in the power of disinfectants and antiseptic remedies, resolved to try such remedies, one after another; the only question being whether to use those compounds which acted by oxygenizing or by disoxygenizing. He ultimately decided to use the disoxygenating antiseptics, as being the most safe; and fixed upon sulphurous acid as less irritant for the respiratory organs than chlorine. He used it externally by fumigation, by burning refined sulphur in the sick rooms, and internally by giving sulphurous acid mixed with pure water—the usual dose being ʒ ı, mixed with one ounce of water, and repeated every third hour. The patients at first disliked the fumigation, from the strong and pungent odor of the sulphur; but they soon felt its good effects and desired to have more. These good effects were,—the heat of the eruptive fever diminished, and the vesicles dried very quickly, leaving the skin covered with thin brown scales, which soon fell off. Out of 22 patients so treated he only lost one, who came to the hospital moribund, and who died thirty-nine hours after arrival. Seven had confluent small-pox; and of these three were in the suppurative stage. Others were cases of discrete small-pox having the eruption of vesicles abundant. He thus sums up the good effects of the disinfectant method of treatment by sulphurous acid externally and internally:— (1.) It mitigated the primary and secondary fever; lowering the temperature, and thirst was diminished, even when fever

ran high. (2.) The general symptoms were also lessened in severity, such as the headache, backache, and pains in the joints. (3.) He believed the sulphurous acid and vapors had a destructive influence on the small-pox virus. Its destructive effects on parasite life are undoubted (*Brit. Med. Journal*, Nov. 4. 1871, p. 519).

Treatment by Vaccination.—There are also some grounds for believing that vaccination and the hypodermic injection of vaccine lymph "may curb the small-pox," even when performed at a period subsequent to the reception of the variolous poison: and the observations and practice of Mr. R. C. Furley, detailed in the *British Medical Journal* for June 8, 1872, show that vaccination will modify small-pox after the eruption has appeared. An impression prevailed that it was dangerous to be vaccinated while small-pox was prevalent; and also that it was of no use to vaccinate so long as the former vaccination mark was quite distinct. Both these ideas are opposed to facts. On the contrary, Mr. Furley's cases show that vaccination, and the injection of vaccine lymph, especially if done about the second or third day of the disease, possess valuable curative powers, so that a disease which promises to be most severe is curbed or modified. Mr. Furley uses a hollow needle for injection, the bore of the tube of which is large enough to admit a vaccine tube, from which the lymph is forced directly into the circulation. He injects hypodermically in both arms.

Dietetic and General Treatment.—In the first instance, the course to be pursued is for the physician to act on the defensive, and simply protect his patient from certain injurious influences to which he may be exposed,—such as, heating drinks to force out the eruption, which are apt to be given by ignorant and officious friends. Throughout the whole course of the disease, the diet should be strictly limited to slops, sago, arrow-root, and ripe fruits, with cold water or lemonade for drinks, with or without ice. The chamber in which the patient lies should be cool, not above 60° Fahr., and freely ventilated. The bed-clothes should be light, the body-linen daily changed; and, when the disease is long, the patient's back should be often examined to prevent sloughing. The scalp, likewise, should be examined, and, if full of pustules, the hair should be cut off, to prevent its matting. If the disease be recognized early, however, it is proper to shave the scalp, because the irritation which attends the suppuration of the pustules is thereby diminished, and cold

may be more efficiently applied to the head, if necessary. In the early stage of the primary fever, in severe cases more especially, it is necessary to have the bowels well opened in the first instance, and to keep them regularly moved daily by saline medicine, or an enema of three parts water to one of vinegar. A cathartic pill, composed of the following ingredients, will be found to be efficient in most cases, especially if aided by a Seidlitz power, given six or eight hours after the pill; namely,—Two grains of calomel, one grain of the compound extract of colocynth, one grain of gamboge, and one grain and a half of scammony, made consistent with a little aromatic oil The bowels must be daily attended to, and castor-oil, or rhubarb, or magnesia, may sometimes be required. Saline diaphoretics, in the form of James's powder; of the aqua acetatis ammoniæ, to which a grain or two grains of tartar emetic has been added, so as to have $\frac{1}{8}$ or $\frac{1}{16}$ of a grain in every tablespoonful of the mixture, is an efficient and cooling diaphoretic. Spirit of nitric ether, or the nitrate of potass, may be added if required. The surface of the body, over the hands, face, and feet, ought to be sponged several times a day with tepid water mixed with Condy's fluid, or with sulphurous acid, with a view to relieve the intolerable itching; but caution is necessary to prevent exposure to cold. Cold-cream, or a liniment of olive oil, glycerine, and lime-water, or of Carron oil (linimentum aqua calcis), smeared from time to time over the itching surface, by means of a camel-hair pencil, may be found to afford relief; and chlorine lotions are highly spoken of by Eisenmann. With regard to the occurrence of convulsions in children, it is not found that opiates, as recommended by Sydenham and Cullen, are expedient. When the children are robust, or previously in good health, local bleedings, by means of one or two leeches to the temples, are more beneficial. Delirium, violent screaming, intolerance of light or sound, heat of head, all of which indicate a tendency to meningeal congestion, still more clearly warrant the application of leeches. With regard to the propriety of bleeding (general) in adults, it is now well ascertained that it will neither eradicate the fever nor diminish the amount of the eruption; moreover, experience has now amply shown that loss of blood is badly borne in all infectious diseases. The persistent application of cold to the head, and repeated affusion of the body with cold water, is to be preferred, in cases where there is much cerebral excitement. When delirium, with restlessness,

wakefulness, and a frequent pulse, is continuous, an opiate, or the free use of alcoholic stimulants, are indicated; and opium is most advantageously given combined with tartar emetic. A draught, composed of thirty minims of the solution of muriate of morphia, with half a grain of tartar emetic, will be found beneficial in such conditions, especially when given at bed-time. If the temperature rise higher, large doses of quinine, 3 to 5 grains, every three or four hours, are to be given. Cooling drinks, with or without ice, of lemon-juice, tamarinds, neutral effervescing powders, are always agreeable to the patient, who ought, for the sake of coolness, to be very lightly clothed. After the eruption has fully appeared, this is all which in ordinary cases requires to be done, and if, towards the tenth or eleventh day, there is much restlessness or sleeplessness, an opiate may be given.

In the complications which sometimes ensue, such as inflammation of the throat and base of the tongue, opiates are found to be injurious. The general treatment must be by cathartic or purgative clysters, if swallowing is difficult. In the other inflammations, however, opiates are of the greatest service, provided the symptoms be not those of cerebral oppression or bronchitis. In bronchitis, nauseating doses of antimony every hour sometimes procure relief; and if relief does not follow in the course of thirty to thirty-six hours, stimulant doses of mistura ammoniac with squills ought to be given every second hour to promote free expectoration.

In the advanced stage of the secondary fever the strength of the system requires maintenance and support; because the abundant suppuration and extensive cutaneous irritation combine to exhaust the strength, as shown by the weakened pulse, the dark and dry tongue, blueness, paleness, or coldness of the extremities. Tonics, stimulants, and generally nutritious diet, are now called for. Quinine, mineral acids, malt liquors, especially the light bitter ales, light porter, wine, and even brandy, may be demanded. The diet should consist of milk, strong animal broths, eggs, raw or lightly boiled, according to the discretion of the physician, and regulated by the digestive powers of the patient.

The development of a severe eruption on the conjunctiva is to be especially guarded against, by the assiduous employment of cold water applications, or by compresses moistened with a weak solution of corrosive sublimate (one grain to six ounces of water, with or without the addition of muriate of ammonia (Niemeyer).

To prevent the face from being seamed, scarred, or "pitted" by the suppuration of the pustules, has taxed the ingenuity of physiologists and physicians. It has been stated that the influence of the atmospheric air is essential to the development of ths pustules, and, accordingly, anything which would effectually exclude this influence would prevent the occurrence of a scar. But it is evident that the chance of scars can only be diminished by those means which are calculated to allay the general violence of the disease. When the eruption is severe, it is almost impossible to prevent the formation of "pits," because the depression results from the expulsion of a small slough; and the more mild the suppurative inflammation can be rendered, so in proportion will the chance of sloughing, and therefore "pitting" be diminished.

The local means which have been adopted to prevent "pitting" may be shortly stated as follow:—(1.) To open each individual pustule after suppuration has commenced. (2.) To cauterize the pustules with nitrate of silver. (3.) To employ both methods—that is, to open each of the pustules when it becomes vesicular, and introduce a strong solution of nitrate of silver into the cavity of the vesicle. At the end of a week scales fall off, and no pit is left. Or, lastly, to paint the face with a solution of nitrate of silver, in the proportion of one drachm of the nitrate to the ounce of water. (4.) The application of a mercurial plaster, with the view of producing resolution of the papulæ. The preparation in use for the purpose at the Children's Hospital in Paris consists of twenty-five parts of mercurial ointment, ten parts of yellow wax, six parts of black pitch. With this plaster the face is to be covered, and so to remain for several days, (3.) Sulphur ointment, applied several times a day. (6.) Calamine mixed with olive oil, to form a coherent crust (Bennett). (7.) Tincture of iodine, painted over with a brush. (8.) Saturated solution of gutta percha in chloroform (Drs. Graves and Wallace). (9.) To smear the face over with common olive oil. (10.) Skoda prefers compresses moistened with solution of corrosive sublimate (two to four grains in six ounces of water) to mercurial plaster, which induces too much elevation of temperature. (11.) Hebra recommends cold water compresses only.

All of these applications have been for the most part, applied to the face, the hands, and the arms only

The severity and the mortality of small-pox have led many

to think of means by which the disease might be completely extirpated. This leads to the consideration of—

II. *The Prophylactic, Sanitary, or Preventive Treatment of small-pox.*—More than half a century ago it was generally taught, among English physicians, that small-pox attacked the same individual only once in the course of life, and that its double occurrence in the same person was either very rare or next to impossible. The observations of Drs. Willan, John Thomson, Mr. Cross, Dr. Barnes, Dr. Craigie, and others since the time of these eminent physicians, lead to the following general conclusions :—(1.) Small-pox, though in general attacking the same individual only once during the course of life, may, however, affect him a second, and even a third time. (2.) This happens much more commonly when the first attack has been one of mild distinct small-pox, than when it has been severe ; and if the first attack has been one of confluent small-pox, it is rare for the same individual to have a second attack. (3.) It is established by numerous observations, that an attack of any one of the varieties which have been named spurious small-pox, or abortive small-pox, or chicken-pox, by no means secures the same individual from an attack of confluent small-pox at a subsequent period. (4.) Small-pox produced by inoculation does not necessarily secure the individual against an attack of small-pox induced in the natural way. (5.) Every previous attack, however, of small-pox, whether natural or inoculated, exercises some modification on that which succeeds. This modification may be various in degree, from very slight and almost imperceptible to very conspicuous and remarkable. In this modification the symptoms of eruptive fever may be mild and of short duration ; and the eruption may consist of vesicles or hard pustules, which disappear without suppuration. (6.) The most powerful modifying agent on the course of small-pox is the action of the cow-pox on the constitution, or the disease produced by the application of vaccine lymph to the exposed skin. The specific disease so induced, in a large portion of cases, not only renders the individual less likely to be affected by the variolous effluvia, but, if he is affected, changes very much the characters of the disease which may supervene. Though the fever which precedes the eruption in cases of this class be similar in form and equal in degree to that by which the inoculated small-pox is attended, the eruption is either papuliform or tuberculated, without much surrounding inflammation. A

similar eruption is produced when vaccine and variolous matter are inoculated at the same time in the same individual; or when a person who is exposed to the variolous contagion has been inoculated with vaccine lymph early enough to mitigate, but not wholly to supersede, the eruption of small-pox. In such circumstances the vaccine lymph and variolous matter restrain and counteract the operation of each other on the system and on the skin. To these eruptions of modified small-pox the general name of varioloid eruptions has been applied. (7.) Cow-pox destroys the susceptibility to inoculated small-pox almost entirely; but the susceptibility to the natural disease, or that by inhalation, it does not entirely extinguish. This susceptibility, however, it diminishes in a much greater degree, and much more effectually, than inoculated small-pox does. (8.) The susceptibility to second attacks of small-pox,* and attacks of small-pox after vaccination, is principally favored by the existence of an epidemic constitution of the atmosphere, and by the circumstance of early life, or the age below ten years. If no epidemic influence exists, the occurrence of second attacks of the disease may not be observed for a long series of years. But if, on the other hand, the atmosphere should possess or acquire an epidemic or variolous constitution, then neither the circumstance of a previous attack of small-pox, nor vaccination, can insure many of those under ten years of age, and not a few between that and thirty, from attacks of small-pox.

The preventive management of small-pox consists: (1.) In the artificial production of the disease by inoculation, or artificial variolation. (2.) In the modifying and protective influence of vaccination.

Inoculation consists in the application of small-pox matter or virus to the surface of the corium, exposed by a puncture or scratch. The result is a local inflammation similar to small-pox, attended with an eruption and a fever, generally milder in form than small-pox acquired by breathing an atmosphere contaminated with the specific poison of the disease. The poison thus passes through the mucous membrane to infect the blood; and hence this is called the "natural way" of contracting small-pox. For obvious reasons, the operation of inoculating the poison of small-pox has been

* The average number of second attacks of small-pox seems to be one per cent. (R. Acad. of Med., Marseilles, 1828; and B. and F. Med.-Chir. Review, Jan., 1848, p. 74).

rendered illegal in this country, and the practice of vaccination has been attempted to be enforced by law.

Sore Throat, Clergyman's—*See Pharyngitis, Chronic.*

Sore Throat, Sloughing.—*Definition.*—Idiopathic ulceration of an acute form, attacking the tonsils and rapidly running into sloughing of the fauces.

Treatment.—In all cases of sloughing sore throat a stimulating and tonic treatment must be pursued. Tincture of the perchloride of iron, quinine, and chlorate of potash, are the most suitable internal remedies. Disinfecting gargles of carbolic acid or permanganate of potash are not only agreeable to the patient, but very useful in checking the offensive discharges.

Spasm of Muscle—*See Muscle, Spasm of.*

Spleen, Inflammation of—*See Splenitis.*

Splenitis.—*Definition.*—A primary acute inflammation of the substance of the spleen.

Treatment.—Bleeding in splenitis will not effect a cure, while mercury is most pernicious. A spleen mixture, not dissimilar to that recommended by Celsus, is most in vogue in India. The best, according to Mr. Twining, consists of the following:

℞. Pulv. Jalap.; Pulv. Rhei.; Pulv. Calumba; Pulv. Zingib; Potass. Supertart., a a ʒ j.; Ferri Sulphat., ℈ ss.; Tinct. Sennæ ʒ ss.; Aquæ Menthæ Pip., ʒ ixss. Of this mixture an ounce or an ounce and a half is to be taken twice a day, or such quantity as may produce three or four stools in the twenty-four hours.

The iodide of potassium and the bromide of potash have been more recently recommended. The dose of the bromide of potash is gr. v. to x. ter die, combined with camphor mixture. The marked influence of the biniodide of mercury, in the form of an ointment rubbed into the skin over the surface of a goitre, in reducing its enlargement, has been already noticed. It has been similarly used in cases of enlarged spleen; and the invalid soldiers who suffer from enlarged spleens invariably apply for some to take away with them when they are discharged from Netley Hospital.

Spinal Cord, Inflammation and Suppuration of—*See Encephalitis.*

St. Vitus' Dance—*See Chorea.*

Stomach, Chronic Ulcer of.—*Definition.*—Inflammation of the stomach, ending by loss of substance in the form of an ulcer.

Treatment.—Chronic ulcers are to be treated by rest to the stomach, and by dietetic rather than by medicinal means. The patient must eat in small quantities, especially of milk compounded with arrow-root, macaroni, semolina, sago, tapioca, biscuit powder, barley meal, Indian meal, or oat-meal gruel. Iced milk, combined with one-quarter to one-third of lime-water, is particularly recommended, two or three tablespoonfuls of which are to be taken at short intervals; so that about two quarts of milk may be thus used during the day; rendering regular and more bulky meals unnecessary. The lime-water tends to prevent coagulation, and the milk more readily passes unaltered into the intestines, to be digested by them rather than by the stomach. The most complete rest possible ought to be given by stopping the supply of all nutriment by the mouth, and supporting the patient for several days by nutritive enemata. Perfect quiet in the recumbent posture must be observed, the lips and tongue being moistened from time to time by a little water. The patient may thus be kept for eight or nine days, or even longer, on nutrient enemata alone, when the pain, the irritability of stomach and of the system will cease. The substances most useful for enemata are milk, strong unsalted beef-tea, raw eggs beaten up in milk, occasionally a little brandy, and (generally in two enemata daily) ten or twenty minims of tincture of opium. The enemata should be as small as possible, from two to six ounces only at a time. The interval to the stomach thus gained of complete rest is of the greatest importance towards success in the treatment of gastric ulcer; and, combined with the restricted diet described, will usually effect a cure in three weeks (Dr. Balthazar W. Foster, of Birmingham, *Brit. Med. Journal*, June 3d, 1865). Next to dieting, blood-letting by two or three leeches, applied to the region of the stomach about twice a week, affords obvious benefit. Blistering applied to the spine may relieve the dorsal pain. Small lumps of ice may be swallowed if the stomach is irritable; and astringent remedies, especially the salts of metals, such as a combination of iron and alum, are of use; and gallic acid, nitric acid, and bitter barks may be administered. Constipation is to be counteracted by enemata. When hæmorrhage occurs, small bits of ice may be swallowed, and rest maintained in

the horizontal posture. Astringent medicines are to be administered, such as oil of turpentine, acetate of lead and opium, alum and tannic acid. Oil of turpentine should be given in doses varying from ten to twenty minims in cold water, and repeated more or less frequently according to the urgency of the symptoms. Ergot may also be employed. When hæmorrhage is copious, a mixture containing ten minims of diluted sulphuric acid and five grains of gallic acid in water, taken every two or three hours, is the best remedy (Dr. B. Foster). Vomiting may be relieved by dilute hydrocyanic acid (five minims), combined with bicarbonate of soda (twenty or thirty grains) in solution, repeated every two or three hours. The subnitrate of bismuth, in doses of ten to twenty grains, every six or eight hours, alone or combined with five to ten grains of compound powder of kino, has a remarkable effect in relieving pain, vomiting, and diarrhœa (Brinton). Seller's bismuth mixture is also an efficient remedy.

Stomatitis.—*Definition.*—Inflammation of the mouth.

Treatment.—The mouth should be frequently washed with emollient fluids, such as linseed infusion, diluted glycerine and biborate of soda, or honey mixed with biborate of soda. The following lotion may be painted over the lips and mucous membrane of the mouth and tongue, namely:—Sodæ Biboratis, fl. dr j.; Glycerini, fl. oz. ii.; Aquæ Rosæ, fl. oz. iv.; misce (Tanner). Creasote, vinegar, carbolic acid, glycerine, and alcohol are also recommended as local applications. The late Dr. Symonds, of Bristol, recommended combinations of turpentine, with glycerine and alcohol; equal parts of turpentine and glycerine, applied with a soft brush two or three times a day, being, in his opinion, a curative application, whether the lining of the mouth be red and puffed, or pale and œdematous, or studded with superficial ulcers, or opaque yellow accumulation of secretion or epithelium. He also recommended that follicular ulcers on the inside of the lips and cheeks and tip of the tongue should be treated by sulphate of copper applied once or twice a day (*Brit. Med. Journal*, March 13th, 1868). In severe cases, where the breath becomes fetid, with the submaxillary glands large and swollen, the lips and gums tumid, the face flushed and swollen, and the fever intense, chlorate of potash must be freely given internally, to the extent of five grains every four or six hours. Besides these remedies, the solution of the pernitrate of iron, internally, has a beneficial effect upon

the sores, prescribed in the following formula:—Liq. Ferri. Pernitratis, gtt. xl.; Syrup. Aurant, fl. oz. ss.; Aquæ, fl. oz vss.; misce. A fourth part may be given to a child three or four years of age four times a day (Dunglison). In cases where parasitic vegetable productions abound (parasitic thrush), the application of a solution of sulphite of soda (fl. dr. i. to fl. oz. i. of water) removes the deposit in twenty-four hours (Jenner). The secretions of the mouth being acid, the salt is decomposed, and sulphurous acid is set free, which destroys the parasite. A change of air is often absolutely necessary to restore the patient to health; and arsenic and iodine, combined with good diet, are useful restorative agents in repairing the faulty nutrition of the child.

Stomatitis, Gangrenous—*See Cancrum Oris.*

Struma—*See Scrofula.*

Sunstroke.—*Definition.*—An affection of the nervous system associated with vertigo and sometimes with headache, or the gradual accession of listlessness and torpidity, with a desire to lie down (Longmore, Barclay). These febrile phenomena may culminate in more or less sudden insensibility, without the power of sense or motion, the breathing rapid, and getting more and more noisy as death approaches. Convulsions of the extremities when in a complete state of coma, in which the patient gradually dies. The approach of death is indicated by the failure of the heart's action, the fluttering of the pulse, the irregularity of the respiration; and the fatal event may supervene within five minutes to a few hours after the disease has become fully expressed. Death is either by syncope, apnœa, or by a combination of the two. In cases which recover, various sequelæ are apt to supervene, such as forms of paralysis, more or less complete, choreic movements, melancholia, and other forms of disorder of the intellect.

Treatment.—Keeping in view the nature of this disease, and the various modes in which death may approach, the line of treatment may be indicated as follows:

With regard to the class of cases in which death tends to occur suddenly from syncope, there is little opportunity afforded for treatment; but the measures indicated are,—removal to a cooler place, if possible, as from the engine-room or stoker's place on board steamships to the open deck; the cold douche, but not too prolonged; keep the surface wet and exposed to a current of air, or assiduously fanned; ex-

clude light as far as possible; remove or loosen tight and oppressive clothing; the immediate employment of stimulants, external and internal, by the rectum as well as by the mouth, and ammonia to the nostrils. Depletory measures of any kind are not to be thought of. In the less rapidly decisive cases prompt treatment is of the greatest use, while delay is fraught with the greatest danger. The patient must be immediately stripped of his outer clothing; and, being placed in a semi-recumbent position, the cold douche is to be applied, from a height of three or four feet, over his head and along his spine and chest, his extremities being at the same time sponged over with cold water. Relaxation of the pupil is the first symptom that shows the good effect of the treatment, which may require to be repeated several times, on account of returning insensibility; but if there is any evidence of failure of the pulse, this treatment must be discontinued, and the application of cold to the head is then all that can be borne. Stimulants administered by the rectum are recommended by Dr. Levick, to counteract the tendency to prostration. In some cases in India rousing by flagellation with the sweeper's broom was had recourse to with good effect by Sir Joseph Fayrer. The hair is to be cut short as soon as possible, and a blister applied to the nape of the neck, the surface having previously been well sponged over with the acetum lyttæ. When the first violence of the attack is subdued, increasing confidence in the ultimate result may be indulged in so soon as vesication takes place; and in cases where insensibility recurs, after an interval of ten or twelve hours, it may be removed by the application of a second blister to the vertex; which may even be again repeated, there being no doubt as to the good effect it produces. Sir Joseph Fayrer, on the other hand, expresses a want of faith in their efficacy. A blister may also sometimes be applied along the spine in the worst cases. Stimulation by the use of the electro-galvanic current, with the moist sponges applied along the sides of the neck, chest, epigastrium, ought also to be employed. Sinapisms ought generally to be applied to the extremities, and to the chest or sides.

As soon as possible after the employment of the douche, a strong purgative enema ought to be given, those of a stimulant nature being preferred. But as the enema may have to be repeated several times before any effect is produced on the bowels, it may be advisable to let the first enema be

of a simple purgative character, and afterwards let it be followed up by turpentine enemata.

If cerebral congestion is indicated by the state of the eyes already described, a few leeches to the temples may relieve the congestion (Longmore, Barclay); but the prevailing opinion among medical officers of experience in the treatment of this disease is against the employment of blood-letting by venesection, even in severe cases. In all the cases which have been recorded in which it has been employed, it seems to have been generally hurtful, and to have hastened the fatal termination. In cases when it has seemed at first to give relief and to mitigate the symptoms, the improvement has been only transient, and followed by relapse into a more dangerous and fatal condition. But no absolute rule can be laid down in regard to abstraction of blood. There are cases in which it may be necessary, in order to avert suffocation; but they are the exception, and it is possible there may be more danger to life in the laboring and distended heart and the embarrassed lungs, than in the loss of a few ounces of blood; which, if it would have tided the patient over the danger, as it sometimes might do, would be the lesser evil, and as such should be chosen. Each case must be treated on its own merits (Sir Joseph Fayrer).

In cases where the breathing is much oppressed, and the bronchial tubes loaded with mucus, the patient should be turned occasionally over on his face and side. In the convulsive form of the disease, where the greatest irritability of the nervous system prevails, the douche is found to be inadmissible, from the agony which it occasions. In such cases Dr. Barclay has seen great benefit from the inhalation of chloroform. After a few inspirations the convulsions for the most part ceased, and sleep was very easily induced; but in one or two instances, after a considerable interval of consciousness, febrile symptoms increased in severity, coma supervened (probably effusion having occurred within the cranium), which was followed by death. But the cases in which chloroform can be used are comparatively few; and very great care is necessary in its employment, so that the inhalation may be suspended at once, as soon as any effect is produced upon the pulse.

In the most severe forms of the disease the principle of management is to reduce as quickly as possible the blood-heat, and that before tissue changes have begun. As the hyperpyrexia is due not only to the direct operation of heat

on the nerve centres, blood, and tissues, but to the fever set up by vaso-motor disturbance, those remedies are indicated which have been already mentioned as useful for the reduction of temperature. The unduly heated blood is a poison for the cardiac and vaso-motor centres tend to cause death, either by syncope or asphyxia. This is best effected in sunstroke by rubbing the body over with ice, as large as can be handled, as recommended by Dr. Levick, and as has been proved to be successful by Baumler and Dr. Woodman at the London Hospital. Tepid body baths, with cold affusion to the head and back of the neck, or general cold affusion, may be employed; also, injections of iced water. Keeping pieces of ice in the axilla until there is returning consciousness, which may not be for several hours, and, therefore, great caution is required in such use of ice, so as not to induce gangrene of the skin, or continued depression, as indicated by a thermometer in the mouth, axilla, or rectum.

The sequelæ of sunstroke are generally, persistent headache, fixed or shifting pain in the back, choreic movements of the forearm and hand, convulsive disorders, mental weakness. These symptoms are suggestive of hæmatoma of the dura mater, as a probable lesion in such cases, and indicate rest, attention to the functions of the skin, and change of air, and removal from a hot to a cold climate. All stimulants and all excesses of diet, or errors in diet, are to be specially guarded against. When the pain is fixed and severe, long-continued counter-irritation at the nape of the neck, and a course of iodide of potassium, may benefit the patient; but many cases are quite unrelieved by treatment, as the records of the invaliding hospital at Netley show every year (Dr. Maclean).

Measures for the Prevention of Sunstroke.—(1.) If a march is to be undertaken during hot weather in India, all weak and sickly men should be weeded out and left behind. (2.) The costume should be suitable for the early morning hours before sunrise, as well as for the scorching period which follows, when the men are for the most part in their tents. It should consist of materials of slow conducting power, of a color by which heat is not readily absorbed, and its fitting should be as loose and light as possible. A flannel shirt should be worn, to prevent exposure to sudden chills, and a flannel belt round the loins may be worn with advantage, except in the hottest weather. The shirt-collar should either

be open, or made so wide as to prevent all risk of its pressing injuriously on the veins of the neck. Above all, some form of knapsack should be devised other than that hitherto in use. The authorities, strongly urged by the late Dr. Parkes, have adopted a valise equipment, which is a great improvement on the older knapsack, and Surgeon-Major W. S. Oliver has devised another, which has also been favorably reported upon. Both of them do away with the use of cross-belts, so injurious to the functions of the organs within the chest. The march ought not to commence too early in the morning. The troops should be on the new ground about an hour after sunrise, and the pace should never exceed three and a half miles an hour. There should be a halt for seven or eight minutes every hour, or oftener, if the men are exhausted; and a longer halt half way, when each man should have a cup of coffee and a biscuit. They ought also to have their ration before starting in the morning. An ample supply of water should be provided for the men by "bheesties" attached to each company, and always compelled to march with it. No man should be allowed to fall out without being accompanied by a non-commissioned officer, who should bring him to a medical officer at once if sick, and if not, he should bring him up to the column at the halt. All men so falling out should be brought up to hospital tents for examination immediately on the arrival of the regiment in camp. The men should carry nothing on the march but their rifles and ammunition—the quantity of the latter being kept as small as is consistent with safety. They should be allowed to march "easy" and loosely clad, more particularly in passing through jungles or ravines. No halt should ever take place on such ground when better may be had within a moderate distance. When the sun is up, halts should be so timed that shelter may be obtained by open topes. Camps should be formed on as high and open ground as possible. The sites for camps in India marked out by the "official" pillars, are generally the most objectionable that could have been selected (Barclay, Indian Sanitary Commissioners, and others). As much space should be allowed between the tents as the ground will admit of. Tents should be pitched as speedily as possible, camels and elephants being provided for their transport—carts never. "Kus-kus" mats should be kept constantly wet.

Troops in the field during the continuance of the hot winds in India should have the best description of tents that

can be got for hospital purposes, and be provided with the best known means for keeping them cool. An abundant supply of water in camp is of the utmost importance, care being taken that the bags containing it are in good repair, hung up within easy reach of the men, and kept always filled with water. Sentries should be under cover during the heat of the day; and the men should be instructed, whenever they go out in the extreme heat of the sun, to put a wetted towel or thick handkerchief over the head, under the cap, and around the back of the neck and face. The men should be encouraged to take exercise during the cool of the evening; or, at all events, to leave their tents, so as to permit of their thorough ventilation; and wherever it is practicable, bathing should not be omitted. Rations of spirits ought to be discontinued in India. It may be a question as to what should be substituted instead; but all authorities are agreed that the system of "spirit rations" tends to convert young soldiers into drunkards. The sleeplessness, which sometimes is a premonitory symptom of the disease, may be relieved by chloral hydrate combined with bromide of potassium, followed by a purge.

Supra-Renal Capsule Disease—*See Addison's Disease.*

Syphilis.—*Definition.*—The result of a specific living poison; or, of "a something" of an uncertain nature, but capable of self-multiplication, which breeds in the blood and tissues, which is introduced into the system solely by contagion, inoculation, or implantation on some part of the body of a healthy person,—*i. e.*, a not yet syphilitic person, generally through an abrasion or sore consequent on sexual intercourse with an infected person (acquired syphilis), or by inheritance (congenital syphilis). Three weeks or a month after contagion and absorption of the poison, a peculiar series of phenomena begin to show themselves, which mark the general infection of the system, namely,—First, a distinct specific fever is followed by or attends the development of; Second, the principal anatomical signs of general infection, which consist of—(*a.*) induration (specific) round the spot where the virus has been implanted; (*b.*) induration of the lymphatic system of glands; (*c.*) the development of a cutaneous and mucous exanthem; (*d.*) the formation of nodes or gummatous nodular tumors in the connective tissue generally, and especially in that of the true skin, bones, mucous

membranes and solid visceral organs, *e. g.*, liver, brain, lungs and heart (visceral syphilis) ; (*e.*) a cachectic condition of the system which follows and accompanies the phenomena of infection ; and (*f.*) indurations which may remain in the form of hardened fibrous tissue in various parts of the body for an indefinite period of time. The whole course of the disease is characterized by slow, but progressive development, often marked by periods of recrudescence.

Treatment.—(*a.*) *Preventive.*—There are certain facts which must be kept in view in the consideration of prophylaxis. (1.) The disease spreads principally by sexual intercourse ; (2.) prostitution is the source whence the syphilitic virus is ever freshly drawn, and the experience of thousands of years has shown prostitution, alike in the ancient and the modern world, to be an unavoidable evil, the suppression of which is impossible ; (3.) with the intimate relations existing at the present day between all parts of the world, and the unbounded intercourse between different places at home and abroad, which has been developed in recent times, syphilis is constantly being transported from one place to another. In the interest of public health it is the duty of the State not only to limit prostitution, but to exercise a supervision over it.

Keeping these facts in view, there are other facts which suggest the direction in which preventive methods for repressing the extent of syphilis ought to be persistently carried out, namely :—(1.) Official supervision over prostitution has had the most favorable influence in diminishing syphilis. This is shown in many ways :—(*a.*) Everywhere it is found that secret, unwatched prostitution is far more active in the spread of syphilis than prostitution which is under control ; (*b.*) In 1866, the second Contagious Diseases Act was passed, after long and careful consideration, and is the one now in force. In the Army Medical Department Report for 1875, it appears that during three years immediately preceding the operation of those Acts, the average annual ratio of cases of primary and secondary forms of disease was 104.4 per 1,000, whereas in 1875 it did not exceed 45.8, and in the period from 1870 to 1878, the average rate of prevalence of the disease fell to 44 per 1,000 men ; and further, it appears that the ratio of primary disease was 53.4 in 1866, but in 1875 it had declined to 33.5. (*c.*) Through the courtesy of Sir W. M. Muir, K.C.B., the Director-General of the Army Medical Department, I am able to give the results for 1878.

At fourteen stations under the Act, the average annual strength of the troops was 53,813, among whom admissions for primary venereal sores averaged 40 per 1,000, and 78 per 1,000 for gonorrhœa. On the other hand, at fourteen other stations not under the Act, the average strength of the troops being 45,316, the ratio of admissions among them was 86 per 1,000 for primary venereal sores, and 121 for gonorrhœa. Thus, at the stations not under the act, the average rate of admission for both forms of disease was 103.5 per 1,000, as against 59 at the stations under the Act. At these fourteen stations under the Act, the highest rates of admission for primary sores were 53 and 54 respectively per 1,000, at Aldershot and the Curragh ; whereas at the fourteen stations not under the Act the rates of admission for these diseases ranged upwards to 140 in Warley, 154 in Dublin, 205 in Manchester, and 250 in London. So with regard to gonorrhœa, the highest rate among the fourteen stations under the Act was 110 at Winchester per 1,000 ; whereas, at the fourteen stations not under the Act it ranged upwards to 151 in London, 161 in Warley, 163 in Sheffield, and 177 in Manchester, per 1,000. (*d.*) In unprotected [The term unprotected district is meant to include the principal cities of the United Kingdom where women can practice prostitution in any public thoroughfare, at any hour of the day or night, without hinderance, and inveigle men to their homes ; and this, too, under the very eyes of the authorities, who are powerless to interfere unless the solicitation be to the annoyance of any passenger or householder, who must in that case accompany the police to the station to charge the woman with the offence, which is rarely or never done. Should the authorities have credible evidence that the woman so conducting herself is suffering from a contagious disease, which she may communicate to others having relation with her, they cannot in any way interfere to prevent it. This woman, when unable any longer (in conseqnence of the severity of her disease) to follow her miserable calling, has no other resource (prostitution failing),to procure her a livelihood than to fall back on the foul wards of a workhouse (Acton).] cities like London, Manchester, Dublin, Sheffield, Preston, the severity of the cases is greater than in the protected [A protected district is one where a woman, instead of continuing wholly or in part to gain an honest livelihood, walks the streets, soliciting different men, and consequently comes under cognizance of the police as being a common prosti-

tute. The British Legislature has determined that in certain garrison towns such a woman, after being repeatedly warned, and still persisting in a life of prostitution, shall submit to a medical examination, on the ground that, should she be diseased, she would communicate a contagious complaint to those having relation with her. It is further enacted that if the woman be found diseased, she shall be at once sent to hospital, and not allowed to leave till she is, in the opinion of the surgeon, perfectly cured. If then desirous of abandoning her evil courses, the girl is relieved from further surveillance, and will be sent to her friends at the Government's expense. If, on the other hand, a common woman, on being discharged from hospital, and released altogether from the operation of the Acts, returns to a protected district, and is again found by the police acting as a public prostitute, she must again be registered. In every case the authorities wish it to be clearly understood that they do not sanction or authorize prostitution ; they only watch over it from their anxiety to prevent its worst evils, and to ameliorate the condition of the women, and check disease (Acton).] places, where the great majority (after the Acts have been in operation for a year or two) suffer from very mild forms of the disease. In 1870 a Royal Commission was appointed to consider the questions raised in the House of Commons on a motion for a repeal of the Act. The report of this Royal Commission speaks most decidedly upon the effects of the Acts in the reduction of the worst forms of disease among the lower classes of prostitutes, and acknowledges that they have both directly and indirectly promoted the objects sought to be attained by those Acts. "They have purged the towns and encampments to which they have been applied of miserable creatures, who were masses of rottenness and vehicles of disease ; " and it was agreed that, for the public good, particular districts which are from any cause peculiarly liable to contagious disease should be subjected to special sanitary legislation. (*e*) In passing these Acts also, Parliament pronounced the strongest protest against the right of an individual suffering from a loathsome disease knowingly to communicate it to another ; hence, in the interest of all, the State has the right to limit the personal liberty of such persons as may be considered dangerous to the common welfare, and to use force, if necessary, to obtain an examination as to the condition of their health. Regular, frequent, and thorough examinations are absolutely neces-

sary. [It seems useless to argue with the opponents of these Acts, who, while loudly denouncing them as immoral because they render vice easier and safer to men, yet wish for the establishment by Government of voluntary lock hospitals and lock wards, which, if they proved equally efficient, must obviously be attended by the same result; who, while stating that the Acts render vice easy and safe, declare almost in the same breath that they are hygienically a failure, and that wherever they have been in operation disease has increased instead of diminished: who, while charging them with all sorts of pernicious and degrading influences, yet deny them any credit for the collateral benefits which they have been shown to have produced; who denounce them as unwarrantably interfering with individual liberty, on account of their compulsory clauses, and yet would not object to the compulsory detention of women in hospital until cured, provided they were left to apply voluntarily for admission. How, they further ask, if the present system is an infringement of personal liberty, is that principle less infringed if the compulsion is removed from one end of the procedure but retained at the other? Surely if compulsion is unjustifiable, it should be abolished altogether; but if it is to be retained at all, it should be retained in the form which has been found most effectual; and the evidence of those most competent to judge shows that the early detection of disease in public women by periodical examination is essential to the efficiency of the system. Even the Royal Commission were constrained to say, "We are satisfied from the evidence that the frequent examination of women is the most efficacious means of controlling the disease." It is not less important in the interest of the unfortunate women themselves, who obtain the immense advantage that their disease is discovered and treated at the earliest possible period, so that while they are prevented communicating it to others, they are themselves saved from all the serious and painful consequences of neglect. (*Brit. Med. Journ.*, July 22, 1876)]. (*f.*) The beneficial effect of these Acts on the civil population cannot be ignored. During the five years 1870–74 the annual death-rate from syphilis (including congenital syphilis) in the eleven districts or stations where the Acts were then in operation, was 21 per cent. lower than it was during the five years 1861–65 before the Acts came into operation in 1866; whereas in the rest of England and Wales the death-rate from this disease was 20 per cent. higher in the second than in the earlier period.

(*g.*) Up to the present time, it has been everywhere found that just that class of prostitutes who are the most apt to spread syphilis will not subject themselves to treatment except under compulsion. All prostitutes found to be syphilitic should be kept in hospital till they are cured. (*h.*) It may also be fairly urged and acted upon, that entire classes of men who notoriously contribute largely to the spread of syphilis, as, for instance, soldiers and sailors, should be subject to periodical examinations; and that sailors especially should be inspected before leaving a port, and again before entering another, and that if found infected they should be placed in quarantine. The workmen in some of the glass-works in the neighborhood of Lyons have of their own accord demanded such examinations, to do away with the possibility of infection from the tubes used by them in blowing glass, which are passed from mouth to mouth (Baumler). (*i.*) Not only ought the Contagious Diseases Act to be maintained and extended to the whole of this country, but the time has come when, as Dr. Baumler observes, it is the duty of all civilized states to combine and adopt some common course of action against these diseases. There is need of universal prophylactic regulations being more and more widely recognized.

A great responsibility rests upon those who oppose the working of such Acts—so fully proven to be preventive of disease, and in every respect beneficial. "In the eyes of every physician, and indeed in the eyes of most Continental writers who have adverted to the subject, no other feature of English life appears so infamous as the fact that an epidemic which is one of the most dreadful now existing among mankind, which communicates itself from the guilty husband to the innocent wife, and even transmits its taint to the offspring, and which the experience of other nations conclusively proves may be vastly diminished, should be suffered to rage unchecked because the legislature refuses to take official cognizance of its existence, or proper sanitary measures for its repression." (Lecky, History of Europ. Morals, Vol. II., p. 301).

(*z.*) The facts relative to the Pathology of syphilis which have been stated in the text, show that Prophylaxis ought to take cognizance of the vehicles by which healthy persons are apt to be inadvertently infected—(*a*) From the use of such drinking vessels, plates, spoons, towels, &c., used by those suffering from secondary forms of syphilis; (*b.*) con-

tamination from surgical instruments which have been employed upon the syphilitic; (*c.*) the selection of healthy children from whom other children are to be vaccinated—only those children known to be healthy, and whose parents are known to the physician, should be used as the sources of vaccine matter; (*d.*) the choice of wet nurses for healthy children ought also to be carefully selected, so as to exclude those who may show the least suspicion of having had syphilis; (*e.*) on the other hand, it is necessary to prevent children with hereditary syphilis being given to healthy wet nurses; (*f.*) the guardians of syphilitic children ought to be warned of the danger of their infecting healthy children through kissing them, and also by the use of the eating and drinking utensils of such infected children (Baumler).

(3.) Individual Prophylaxis—From what has been written, it must appear clear that the only chance of preventing infection, alike on the part of the male and the female, is personal cleanliness after sexual intercourse. Much of the good that has resulted from inspection of females to the females themselves, as in Paris, Brussels, and other places, has been, I believe, mainly attributable to the greater attention to personal cleanliness which such inspections have brought about. Numerous lotions have also been used; and if a man will have sexual intercourse with a strange woman, let him wash immediately after the act, taking care to cleanse thoroughly the folds of the prepuce, especially near the frænum, and in the sulcus of the corona glandis. If a woman will have sexual intercourse with a strange man, let her use a syringe with hot water, to wash out the vaginal passage, taking care to cleanse thoroughly the folds of the mucous membrane at the orifice of the canal and of the labia pudenda. The real preventive remedy after exposure to infection is the most ancient, the most simple, and the most efficient—Wash, and be clean.

(4.) Syphilization.—By this name an operation is meant which has for its object the eradication of syphilis from the system by repeated inoculations of the syphilitic virus itself. Dr. Boeck, of Christiana, is the most persistent advocate of this mode of dealing with syphilitic cases as a remedy against constitutional affections. And it was at one time seriously proposed to introduce syphilization as a prophylactic, from its analogy to the inoculation of the virus of variola (Auzias Turenne). The method is entirely unjustifiable.

(*b.*) *Therapeutic treatment.*—As in the case of other spe-

ific diseases that are implanted by inoculation, the effect of the virus begins at once at the point of inoculation, and may not be destroyed as to its contaminating powers by any agency we know of. Experience shows that we must not conclude that, even by an early destruction of the sore, the occurrence of constitutional infection will be prevented; and the application of caustics to abraded surfaces after their exposure to contagion is quite useless to prevent infection. The poison is observed in a very short time—within a few hours (Berkeley Hill). Still, however, in some cases positive results have been obtained which encourage attempts to arrest the local progress of the sores with escharotics, if they are applied at an early period, and before contamination of the system is evinced by indurations. Ricord and Sigmund have found that sores destroyed by the more powerful caustics, within from three to five days, have not been followed by syphilitic symptoms. But these may have been cases of soft chancre, which would not infect. The only efficient caustics for this purpose are—(1.) The strong nitric acid; or, (2.) The potassa cum calce (most conveniently used in the form of small sticks). Nitrate of silver is useless, from its limited action and deficiency of penetration.

If the sore threatens to slough, the parts should be wiped dry, and fusing nitric acid applied, and afterwards a lotion of the potassio-tartrate of iron, while the same drug is given internally. Chloride of zinc paste (Fell's) is a useful escharotic to excite a healthy action round the periphery of a sore. If great pain attends the local progress of the chancre, morphia in liquor ammonia acetatis is highly beneficial. "Black wash" of the strength of 8 grains of calomel to the fluid ounce of lime water, or weaker, as 5 or even 3 grains to the ounce, is of use in the treatment of large ulcerating indurations. The experience of 300 years has shown that mercury is a remedy which acts as a direct antagonist to the virus of syphilis; and no unprejudiced person can deny that its action upon syphilis is quite evident, especially upon the cutaneous manifestations of the disease. Mercury, administered during a primary sore, seems to be one of those agents which are able to break the regular order of the manifestation of symptoms, as it does to several other diseases; although it may not seem to possess any certain prophylactic power. [There are remarkable variations in opinion as to the influence of mercury in curing syphilis. At one time discussion ran high regarding its use; and, of course, extreme state-

ments were made on both sides, while the facts adduced never warranted the extreme conclusions. Consequently, at one time mercury has been regarded as capable of absolutely preventing the constitutional affection; at another time it has been accused of giving to the syphilitic virus the impulse which sets up its worst results. It is now quite certain, however, that mercury administered continuously to the extent of salivation, or approaching it, exerts a poisonous influence, and produces constitutional effects of a very dangerous kind (Graves); and Hunter himself says "new diseases arise from mercury alone;" while it cannot be doubted that in cases in which mercury has been freely given, we are never certain that secondary symptoms may not supervene. Barensprung, of Berlin, during his most extensive experience, came to the conclusion that syphilis not only can be cured without mercury, but, under its use, he believed the disease is often rendered latent for months and years, and its complete cure delayed. Starvation and Zitmann's weaker decoction were the means he employed for cure (*Ann. de Berlin Charité*, ix., 1, 1860; *Syden. Society Year-Book*, 1861). Hermann came to similar conclusions, from his experience in the syphilitic wards of the Vienna Infirmary. The experience of Diday is not less decided. He states that mercury cannot now be said to cure syphilis radically, so as to render all relapse impossible. He does not, however, as is the case with the others, practically withhold mercury in every case. If the primary lesion becomes an indurated, woody chancre, mercury is given. If the chancre is a doubtful one, he recommends waiting till some of the early constitutional phenomena render the nature of the case evident, and indicate the probable gravity of the syphilis with which he has to deal. He employs iodine, iron, and quinine, on the appearance of slight relapses, with a tonic and supporting regimen. He recommends iodides, to combat the chloro-anæmia, and to relieve the pain of tertiary ulcerations.

Numerous examples may be seen in museums, which are placed there to show that the poisonous effects of mercury produce worse lesions than those of syphilis; and, when combined with the syphilitic virus in a strumous person, the worst lesions of all. In the extreme of syphilitic infection, it ought never to be forgotten that a specific chlorosis results from syphilis, amounting to anæmia; and that mercury will bring about a similar anæmia. But while numerous instances are quoted by authors of the poisonous effects of mercury

inducing lesions similar to those of syphilis, the investigations of Kussmaul, Professor of Medicine at Erlangen, show that mercurial poison produces no single affection or symptom that is identical with, or not easily distinguishable from, those of syphilis. His experience was among the manufacturers of mirrors using mercury in the town of Furth ; and he shows that mercury has but one influence over syphilis—that is, the power of controlling many of its symptoms.

Both kinds of treatment (mercurial and non-mercurial) have been extensively tried since 1816, and formal experiments have been organized on the subject, namely,—First, In 1822, in Sweden, by Royal command, when reports were annually furnished from civil and military hospitals as to trials of the two methods ; Second, Dr. Fricke experimented in the Hamburg General Hospital, and published his results in 1828 ; Third, In 1833 the French Council of Health published a report on the subject. Long before any of these reports were initiated, however, the surgeons of the British Army had the boldness to declare themselves against the system of treatment with mercury, as it was then carried out, and, running into the opposite extreme, introduced measures of non-mercurial treatment altogether. This change was mainly due—(1.) To Mr. Fergusson, who practised it during the Peninsular Wars (*Med.-Chir. Trans.*, Vol. IV.) ; (2.) To Mr. Rose, of the Coldstream Guards, at the same time, but independently of Mr. Fergusson ; (3.) To Dr. John Thomson, the first Professor of Military Surgery ; who, by lectures in the University and College of Surgeons in Edinburgh, and by his published writings, was mainly influential in convincing Scotch medical men of the evil effects of mercuey in venereal diseases. The inquiry, begun in 1816 by these military surgeons, requires to be re-investigated with all the present advanced knowledge of the nature of the disease which we now possess, and with a better prospect of detecting the fallacies which surround the investigations. Under the simple treatment of those eminent men, there can be no doubt that mixed cases of soft, as well as of indurated chancres, and specific or syphilitic sores, were allowed spontaneously, as it were, to develop their distinctive characters. No confidence can now be placed in the results thus published, as derived from clinical observation, because the cure of soft, suppurating, and mixed sores, gonorrhœa, vegetations, suppurating bubos, are all indiscriminately given as evidence of the cure of syphilis. Moreover, cases cannot

be accepted as cured at the time they are simply discharged from present treatment, because they may seem to be progressing to a favorable termination, but not absolutely cured, as is the case with the records of Fricke's experiments.

The great benefit obtained by the experiments, observations and discussions regarding mercury in syphilis, carried on during the first quarter of the present century, as Dr. Berkeley Hill justly observes, has been to show—(1.) That all venereal ulcers can be healed without mercury; (2.) That this drug is not the cause of the relapses so frequent in syphilis; and, (3.) That very much less mercury is required to control syphilis than had been previously supposed necessary. Some interesting cases of syphilis cured without the use of mercury are related by Surgeon-Major Dr. Peter Boileau, in the *Brit. Med. Journ.*, for July, 1879.]

The present position of opinion with regard to mercury in the cure of venereal sores seems to be this, namely,—That it is a very valuable and essential remedy in cases of syphilis, but not in cases of soft chancre; and the difficulty is to express always the nature of the cases for which it is most suitable. Even those who believe most fully in its virtues acknowledge that in primary affections, as when given in the treatment of the local sore, its administration will not always prevent the occurrence of constitutional symptoms; nevertheless the value of mercury in the cure of the induration of the true infecting chancre is now fully recognized. The local lesion, if it appears after the usual prolonged period of incubation, is as much a manifestation that the constitution is already affected as is the developed vesicle of variola vaccina a manifestation that the constitution is affected with variolous poison. Looking, also, to the nature of the virus of syphilis, the excision of the primary lump or sore—the specific induration—as practiced by Dr. Veale, assistant to the Professor of Medicine in the Army Medical School at Netley (*Edinburgh Monthly Journal*, July; 1864), and by Dr. Humphrey, of Cambridge, (*British Medical Journal*, August 13, 1864), is a justifiable operation; for the original sore, when it has become a "lump" (as in its state of "woody-like" induration), is an undoubted maintainer of infection and of contamination of the system. If, therefore, it can be easily and completely insulated, as when on the prepuce, the cure of the constitutional symptoms may be facilitated and shortened. There are also certain forms of secondary syphilis for which the administration of mercury

is unsuitable. These are the pustular eruptions, or ecthymatous states in rupia and in syphilitic anæmia. For the cure of other secondary symptoms mercury is certainly of service. If given to the extent to which I have limited its use in the text, I believe that secondary symptoms disappear more rapidly under its regulated use than by any other plan of treatment. All our treatment of syphilis rests on that evidence which must always guide the hand of the physician, namely, —practical experience. That has certainly taught us that the mercurialism of John Hunter's time was an error; and that its regulated administration in cases of syphilis is undoubtedly beneficial, and especially during the evolution of the specific symptoms of infection. Dr. Jeffrey Marston, late of the Royal Artillery, has given an admirable summary (*British Medical Journal* of Feb. 21, 1863) of the means and indications of treatment by mercury which he has found most useful. His experience shows that the system ought to be affected as slowly as possible; and there ought to be a remission of the remedy for a time as soon as that effect has been attained. As soon as the symptoms for which the mercury was given have disappeared, steel and other mineral tonic remedies ought to be given; and in three cases where the general health seemed to have suffered, podophyllin in small doses (one-sixth of a grain), with extract of belladonna, was given with marked benefit. If the system is too early brought under the influence of mercury, and the symptoms are not benefited, chlorate of potash in compound tincture of cinchona may be given with advantage; and in strumous subjects the bichloride of mercury, dissolved in ether and added to cod-liver oil, is found to be most useful. Some of the most intractable forms of syphilitic squama are best treated by a combination of liquor arsenicalis, solution of bichloride of mercury in very small doses, and tincture of sesquichloride of iron; while the use of soap in ablution ought to be avoided (Startin). In the administration of mercury for the cure of syphilis, salivation, or anything approaching to that condition, should never be induced. Tenderness of the gums should be the utmost physiological effect, very gradually and gently brought about. As soon as the evolution of consitutional symptoms has commenced, such as the specific induration of the sore or glands, cutaneous, scaly, tubercular, condylomatous affection, or iritis, the sooner mercurial treatment (to the extent indicated) is commenced the greater will be the benefit. The good

effects of mercury are known by the following results :— "Given early, it promotes the dispersion of the induration at the point of contagion or inoculation, and the enlargement of the glands; it delays and lessens the severity of the cutaneous eruptions, and of all the symptoms which accompany the early skin eruptions" (Berkeley Hill). When induration is apparent, mercury ought to be at once administered; and all the useful effects of the remedy are generally obtained when the slightest possible sign of its influence is betrayed by the gums and breath. The most convenient form of administration is either a pill or fluid solution of corrosive sublimate (perchloride). The dose should always be small, and combined so as not to irritate the bowels. Grey powder or blue pill may be compounded in the following forms, namely :—Two grains of grey powder with two grains of compound ipecacuanha powder, made into a pill with glycerine, two of which are to be taken daily; or two or three grains of blue pill combined with a quarter of a grain of opium powder, with sufficient glycerine to make a pill, and taken every night at bedtime. Either of these forms is sufficient for women and young men. In adult men, three grains of blue pill or grey powder twice or thrice a day; or one grain of calomel every night and morning, with a third of a grain of opium, are most suitable. When the mercury is obviously producing its physiological results, it may be omitted for a day, and then again carried on in smaller or less often repeated doses. Dr. Berkeley Hill recommends that the perchloride of mercury be mixed with iodide of potass, so that a freshly formed biniodide of mercury is kept suspended in a solution of iodide of potass, in the following formula :—

℞ Perchloride of Mercury, gr. 3; Iodide of Potass., grs. 96; Compound Tincture of Bark, 4 ounces; Sesquicarbonate of Ammonia, grs. 60. Water sufficient to make up 8 ounces.

The dose of this compound ought to be two teaspoonfuls, half an hour before meals, three times a day. Two-thirds of a grain of perchloride of mercury may be taken daily; but except in such a solution as the above its action is uncertain. In Germany, Zitmann's decoction is much used. It is of two kinds—the stronger and the weaker. The former is compounded as follows :—

℞ Rad. Sarsaparillæ, ℥ xii.; Aquæ, ℔ xxiv.; Coque per horas duas et adde Aluminis, ℥ iss.; Hydrarg. Chloridi, mitis (calomel), ℥ ss.; Antimonii Oxy. sulphureti, ʒ i.; misce. Coque ad ⅔, et adde Fol. Sennæ, ℥ iii.; Rad. Glycyrrhizæ,

℥ iss.; Sem. Anisi, ℥ ss. Infunde per horam et cola. The dose of this decoction is half a pint to a pint morning and evening.

The weaker decoction is compounded as follows :—

Capiat residuum decocti fortioris et adde Radicis Sarsaparillæ, ℥ ii.; Aquæ, lbxxiv.; Coque per horas duas et adde Cort. Canellæ, Cort. Limonem, Sem. Cardamomi, a a ʒ iii. Infunde per horam et cola. The dose of this decoction is one pint at intervals during the day.

Another mode of preparing it with somewhat different proportions of ingredients is given by Dr. Berkeley Hill, as follows :—

℞. Sarsaparilla, ℥ xii.; Water, three gallons. Macerate twenty-four hours, and put in a linen bag; White Sugar, ʒ vi.; Alum, ʒ vi.; Calomel, ʒ iv.; prepared Cinnabar, ʒ i.

Hang the linen bag in the liquor and boil down, while adding four gallons more water, till the liquor is reduced to two gallons; remove the bag, and add to the decoction the following ingredients, namely :—Anise Seeds, ʒ iv.; Fennel Seeds, ʒ iv.; Senna Leaves, ℥ 1⅓; Liquorice Root, ℥ iss. Press and strain.

About half a pint to a pint is the daily quantity to be consumed of the compound. While the amount of mercury it contains is rarely enough to produce any unpleasant effects, it is enough to control the disease. A weaker decoction of the woods is free from mercury, but is of no value beyond a diet drink.

Iodide of potassium, in doses adjusted to the individual case, appears to act with rapid benefit in some of the syphilitic diseases of the interior of the cranium giving rise to extreme pain. Its administration often causes intense suffering in patients who have been treated previously by mercurials. Two distinct effects are produced :—First, the compounds of mercury fixed in the body are rendered soluble and active; and secondly a form is given to them which allows of their elimination, with more or less rapidity, in a state of combination with one of the elements of the iodide; and thus the patient is subjected anew to a mercurial treatment by the compounds of mercury already present in his body (Melsens, in *Brit. and For. Med.-Chir. Review*, 1853). The dose of iodide of potassium should at first be small, not more than fifteen grains in the twenty-four hours—increasing the dose if the patient bears it well (Melsens, Guillot). Its ac-

tion is aided by a blister over some portion of the shaven scalp, and by having the blistered surface dressed with mercurial ointment; and generally, it may be said that local treatment gives very valuable aid. For example, cutaneous or mucous raised papules remaining persistent, an ointment composed of oxide of zinc, calomel, and simple cerate, hastens their absorption. Eruptions of lichen, acne, and herpes are similarly benefitted by the application of oxide of zinc lotion or ointment; and if prurigo and urticaria be also present, diacetate of lead lotion will expedite the cure. Vesiculo-crustaceous spots will cease to reappear if the affected parts are painted for a few days with a solution of nitrate of silver (gr. x.-xx. to ℥ i), and oxide of zinc lotion applied afterwards.

In the more advanced stages of the suppurative affections, the use of pyogenic counter-irritants ought not to be neglected, such as tartar-emetic ointment. They tend to keep up just so much of a discharge as may be consistent with the strength of the patient; and are worthy of a trial.

In the dry forms of syphilitic cutaneous diseases, and in chronic eczema of the extremities, tar ointment, or an alcoholic solution of tar, is an excellent application; and the disappearance of indolent glandular swellings is greatly aided by the use of strong solutions of iodine. Superficial forms of ulceration attending the pustules of ecthyma are benefitted by the use of solutions of nitrate of silver or sulphate of copper, and generally by caustics and local stimulants. If a sloughing condition threaten ulcerating sores, lotions of the potassio-tartrate of iron will generally improve their aspect. In psoriasis palmaris, and similarly fissured conditions of the skin, glycerine lotions are most useful. But all these local remedies, it must be remembered, are only aids to the constitutional treatment, whether by mercury or iodide of potassium, or simply by a well-regulated hygiene. The patient, during the whole of the treatment, should be warmly clad—should be fed upon a good but plain diet—should take plenty of exercise in the open air in fine weather—should use occasionally (once or twice a week)—warm baths—and avoid stimulants, unless specially indicated and prescribed. During the febrile stage and the exanthem stage he ought to be confined to his bed.

The administration of mercury, to affect the system rapidly, is best effected through the agency of the mercurial vapor bath. It is a mode of administration not liable to af-

fect the digestion, and it permits other remedies to be given by the mouth at the same time, if they be considered necessary. It is also mild, slow, and equable in its action. The mercurial vapor bath is to be managed in either of the following ways. The first method is best adapted for the practice of a large institution ; the method recommended by Mr. Lee is better suited for private practice :—

"The patient is seated on a chair, and covered with an oil-cloth lined with flannel, which is supported by a proper framework. Under the chair are placed a copper bath, containing water, and a metallic plate, on which is placed from one to three drachms of the bisulphuret of mercury, or the same quantity of the grey oxide, or the binoxide of this metal. From five to thirty grains of the iodide of mercury may be employed, or a scruple of the iodide, with a drachm and a half of the bisulphuret. Under the bath and plate spirit-lamps are lighted. The patient is thus exposed to the influence of three agents,—heated air, steam, and the vapor of mercury. At the end of five to ten minutes perspiration commences, which becomes excessive in ten or fifteen minutes longer. The lamps are now to be extinguished ; and when the patient has become moderately cool, he is to be rubbed dry. He should then drink a cup of warm decoction of guaiacum or sarsaparilla, and repose for a short time" (Langston Parker).

Mr. Henry Lee's mode of proceeding is more simple :—"A special and convenient apparatus is used (made by Savigny & Co.), which consists of a kind of tin case, containing a spirit-lamp. In the centre, over the flame, is a small tin plate, upon which from fifteen to thirty grains of calomel is placed, while around this is a sort of saucer, filled with boiling water. The lamp having been lighted, the apparatus is placed under a common cane-bottomed chair, upon which the patient sits. He is then enveloped, chair and all, in one or more double blankets, and so he remains well covered up, for about twenty minutes, when the water and mercury will be found to have disappeared."

With regard to sarsaparilla as a remedy, Sigmund, Syme, and many other acute observers, have come to the conclusion after long and careful trials of the best sarsaparilla, that it does not, *per se*, exercise the slightest perceptible influence on the course and termination of syphilitic diseases. It is usually given in combination with some mercurial preparation, as in the decoction of Zitmann.

As to the original local sore of syphilis, it may be dressed simply with lint soaked in warm or cold water, and renewed every three or four hours. The indurated glands, if they are painful, may be fomented, and the horizontal posture maintained. Moderate exercise may be taken if all local irritation is subdued; and then slightly stimulating lotions may be used to the sore, such as sulphate of zinc, in the proportion of one or two grains to the ounce; or the liquor plumbi diacet. dil. of the pharmacopœia; or the black or yellow wash if the surface is indolent.

Tabes Dorsalis.—(*See Locomotor Ataxy, progressive*).

Tetanus—*Definition.*—Involuntary, persistent, intense, and painful contractions, cramps or spasms, of more or less extensive groups of voluntary muscles; so that the whole of the body may seem to be affected, the spasm yielding and becoming intermittent in some groups of muscles, while at the same time it exists in others, or the continuous tonic spasms are characterized by paroxysmal aggravation of extreme intensity.

Treatment.—So long as the phenomena are peripheral and reflex, the removal of the offending part may arrest the disease; but when it has become central, it is probably always fatal. There are thus two forms of tetanus which demand recognition for treatment as early as possible. Baron Larrey affirms that this disease, if left to nature, is quickly fatal. Sir James Macgrigor says that all the most powerful remedies were fully tried in the Peninsular War, and that little or no dependence could be placed on any of them. There is great tolerance of all kinds of sedatives and narcotics.

Much good, however, is gained by attempting to restore the secretions to a healthy state; also by supporting the patient with food and drink, and by endeavoring to tranquillize the high irritation under which he is laboring. The medicines to be employed are moderate doses of purgative medicines, with tinct. opii m xxv., or its equivalent, 10 grains of Dover's powder, given every three or four hours; and these conjoined with moderate quantities of wine, sago, mixed with strong beef-tea or soup, or other nutritious diet. Musk, also, in ten-grain doses, has been given with some advantage. Some authors lay much stress on a local treatment in traumatic tetanus. Baron Larrey, as the result of his great ex-

perience, says: "When it is caused by the wound, we should not hesitate to operate on the first symptom of tetanus, and thus, as far as possible, remove the causes of irritation." If tetanus follows amputation, he recommends the stump to be sprinkled with powdered cantharides; and in cases where a nerve has been included in the ligature, that the ligature be removed either by section or by actual cautery. In the British army, however, all these proceedings have been adopted, and with very little success. Amputation has been frequently performed without any mitigation of the symptoms. The wound has also been excised, submitted to actual cautery, been blistered, and dressed with every kind of ointment; but the disease has run its course, either uninfluenced, or its fatal termination has been accelerated. Hennen has even seen the wound heal and the patient die on the same day. Nothing, in fact, is so unsatisfactory as the results yet obtained from either the general or local treatment of this fatal affection. Larrey has often attempted, from the difficulty of swallowing fluids that sometimes attends tetanus, to pass an elastic tube; but in all cases he says he met with a contracted state of the œsophagus impossible to overcome, while the attempt was constantly followed by the immediate occurrence of the severest spasmodic attacks.

"If, however," as Mr. Poland observes, "we can help our patient on one day after another, we gain much. Constant watching and constant attention are required by night as well as by day, and unflinching perseverance on the part of the sufferer to aid all efforts made in his behalf, besides the avoidance of all causes of excitement, and more especially drafts of cold air or winds, taking care to preserve a uniform temperature as much as possible." No hope of recovery may be indulged in unless the spasmodic seizures continue to diminish in length and frequence, distinct relaxation of the contracted muscles occurring during those intervals of diminished spasm; and unless the patient becomes able to take food, recovery in the fortunate cases takes place with extreme slowness. It is not till after the lapse of weeks that the muscles entirely lose their spasmodic tension. Russian vapor baths are well spoken of by Hasse and Niemeyer.

Too free use, alike of narcotics and of anæsthetics, must be guarded against. They are valuable aids in maintaining the existence of the patient from paroxysm to paroxysm. Aconite has been used in large and repeated doses by De

Morgan, Smith, Sedgwick, Woakes, and Wunderlich. It ought to be used hypodermically, and there appears to be a great tolerance of the remedy. Cannabis sativa or Indian hemp, is a remedy of real value, if it can be got genuine and fresh. Three grains of the extract, or thirty drops of the tincture, may be given every half hour or hour till narcotism is attained. Cold should at the same time be applied to the spine (Muller, O'Shaughnessy, Chuckerbutty).

The more or less obstinate constipation of the bowels which characterizes this disease, and which is accompanied by a fœtid state of the dejections, ought to be overcome by (1.) turpentine enemata, and (2.) calomel and jalap purgatives. This is most important.

A case of traumatic tetanus under the care of my friend, Dr. John Liston Paul, Surgeon-Major of H. M. Indian service, is reported in the *Madras Monthly Journal of Medical Science* for July, 1872, which recovered under the persistent use of belladonna tincture, carefully observing the effects of the drug upon the system. The bowels were first freely acted upon by calomel, gr. v., and compound jalap powder, gr. xx.; and immediately on the action of the bowels commencing, ten minims of the tincture of belladonna were given in half an ounce of water. In an hour five minims more were given ; and every hour afterwards an increase of three minims was added to the previous dose, till twenty minims were given at one dose. The administration of belladonna was commenced at 10:30 A. M., and by 4:30 P. M. a dose of twenty minims was thus gradually reached. This dose was continued in half an ounce of water every hour till 10 P. M., after which it was given every second hour till the following day, when no relief to the rigidity or paroxysms being obtained, this dose was increased to twenty-five minims every hour. This treatment was persevered in, with the aid also of chloral hydrate occasionally, as well as ice applied to head and spine, and movement of the bowels by active purgatives of jalap and croton oil. At three intervals the belladonnâ had to be suspended, on account of its poisonous physiological action being obvious in the delirium, thirst, and other symptoms. The patient was under active treatment with belladonna for fifteen days ; the amount of tincture taken in that time being ten ounces four drachms and thirty minims.

Yandell states that chloroform up to this time has yielded the largest percentage of cures in acute tetanus (*Brain*, Oct.,

1878). He is of opinion that the true test of a remedy for tetanus is its influence on the history of the disease in the following respects : (*a.*) Does it cure cases in which the disease occurred prior to the ninth day after the injury ? (*b.*) Does it fail in cases whose duration exceeds fourteen days ? Tried by these tests he asserts that no agent has yet established its claims as a true remedy for tetanus. But among the numerous medicines used in the treatment of tetanus chloral is one of the latest, and appears to possess many advantages. Bauer, in his article on tetanus in Von Ziemsen's *Cyclopœdia*, states that other remedies are practically and properly being more and more supplanted by chloral-hydrate. This is superior to every other means, even the inhalation of chloroform ; and the control of the spasm will be attained most satisfactorily by the combination of chloral with bromide of potassium. Billroth also records success in cases of tetanus from the use of chloral.

Dr. J. R. Beck has collected (*St. Louis Medical and Surgical Journal*, June, 1872) thirty-six cases of traumatic tetanus treated essentially by chloral in which a recovery took place in twenty-one instances. Dr. H. C. Wood has tabulated (*Treatise on Therapeutics*, pp. 292, 293) eighteen additional cases resulting in nine recoveries and nine deaths. In the *Practitioner* for November, 1872, Dr. Macnamara, of Calcutta, gives his experience in tetanus among the natives, and says that he treats them by giving forty grains of chloral at bedtime, and by providing proper diet of a nourishing kind. In severe cases, an additional thirty-grain dose is given at midday. Out of twenty successive cases seventeen recovered. Though these cases were probably idiopathic in many instances, the testimony is nevertheless valuable. Within the past few years the medical journals have been constantly reporting cases of recovery from tetanus under the use of chloral, but isolated cases have their value diminished, because the fatal cases are not so likely to appear in print. Nevertheless, the fact remains that many cases of traumatic tetanus have recovered while such treatment has been employed. The drug has been introduced into the system by various channels ; M. Oré has treated cases of tetanus, though unsuccessfully, intravenous injections of hydrate of chloral (*Practitioner*, August, 1877); while success has followed its administration hypodermically in acute traumatic tetanus(*American Journ. of Med. Sciences*, April, 1877, p. 554), and it is stated that a case recovered where chloral, in con-

junction with bromide of potassium, was given by enema (*Hospital Gazette*, New York, April, 1877, p. 15, from London *Lancet*). Dr. Agelastos, of Bucharest, believes that he prevents the occurrence of lock-jaw in traumatic cases by the timely employ of chloral (*New York Med. Journ.*, April, 1877, p. 436). Verneuil says that chloral allays the muscular contractions, and especially those of the respiratory apparatus, which in the last stages of the disease cause asphyxia; and that it changes the acute into the chronic form of the disease. He gives instances of cure where the patients took 100 grains and 245 daily without any bad symptoms. The first of these tetanic patients recovered after thirty days, having been given ℥ vj. of chloral during that space of time (*New York Med. Journ.*, 1876, p. 97). While in charge, as Resident Surgeon, of Dr. R. J. Levis's ward in the Pennsylvania Hospital, Dr. Roberts had the care of four cases of traumatic tetanus, all of which were treated with hydrate of chloral; of this number three recovered, and one died out of nineteen cases.

The evidence appears, indeed, to be very strong in support of the efficacy of chloral hydrate in the treatment of tetanus; and if one thing stands more prominently out in the history of medicine during recent years, it is the influence for good which is being exercised and becoming more easily controlled by the judicious use of those very powerful remedies. Dr. Van Someren of Madras also records successful cases from the use of chloral hydrate, and recommends a more heroic administration of the drug (*Madras Monthly Journal*, May 1872).

Woorara or Curare is reported to have cured thirteen out of thirty-three cases (Demme, Busch). Appropriately given it effectually controls the spasms, and thereby spares exhaustion from them. The hypodermic injection of a solution of curare deserves extensive trial, commencing with such small doses as $\frac{1}{8}$ to $\frac{1}{4}$ of a grain, gradually increasing from $\frac{1}{2}$ to $1\frac{1}{2}$ grains. A solution of one to two grains in 100 drops of water should be made fresh, and 10 drops of this solution injected as a dose. The action lasts about four or five hours, and upon this fact its repetition must be regulated (Demme).

The Calabar bean seems next or equal in importance as a remedy in tetanus. In 1874 an analysis of published cases showed that out of 64 cases of traumatic tetanus treated by this medicine, 33 recovered. Since then this unusual pro-

portion of cures of a disease which was before nearly always fatal, has been considerably increased. When the treatment has failed, the failure has been mainly attributable to an inefficient use of the remedy. The minimum dose of the extract of physostigma which should first be administered, is one-third of a grain. It should be repeated every quarter of an hour, until its specific operation is developed, and the spasms are completely overcome. This effect should be steadily maintained, and then reproduced as often as the spasms recur. It is usually necessary to increase the dose in order to maintain its original impression (Stille and Maisch, *The National Dispensatory*, p. 1080). In the *New York Medical Record* of July 6, 1878, Dr. Burke reports two cases which occurred under his care in New York. One was seen on the tenth day after injury to the foot from treading on a rusty nail. Drop doses of fluid extract of physostigma, of a strength of 60 grains to the drachm, were first ordered, together with castor-oil, as the breath was foul. On the following day the dose of Calabar bean was increased to a drop every half hour combined with 3 i. of whiskey to counteract the depressing effects of the Calabar bean. Finally, the dose was gradually raised till mxiii. of the fluid extract of Calabar bean were administered every half hour; whilst as much as two pints of whiskey were given daily. The other ingesta were always fluid, consisting of milk, eggs, and beef-tea. As good effects were produced the quantity of the extract was gradually reduced, and finally, in about six weeks, entirely discontinued, good care and nourishment completing the cure. In a second case the dose was gradually raised till mxv. of the fluid extract were given every hour, whiskey, at the same time, being always administered. The full physiological action of the drug was also obtainable by injecting hypodermically mxxii. to mxxxiii. of the alcoholic extract of the Calabar bean every hour, 3 iv. of whiskey were also given by hypodermic injection, and about an ounce by the mouth. The patient steadily improved under a treatment in which the alcoholic extract was injected hypodermically in doses ranging from mx. to mxxv. every hour. He was ultimately discharged cured. One grain of the extract of Calabar bean may be given by the stomach; or one-third of a grain, mixed with x. or xv. minims of water, and neutralized by Carbonate of soda, by subcutaneous injection, repeated in two hours, and increasing the dose gradually.

Sir Joseph Fayrer records two cases of traumatic tetanus

treated and cured by opium smoking and internal administration of chloroform and hemp. Both patients were Hindoos. The average quantity of opium-goolic smoked daily by one patient was 84 grains. The chloroform and hemp were given as in the following prescription:—

℞ Chloroform; mx ; Extract of Indian hemp, gr i.; Mucilage, ʒ i; Camphor Mixt. ℥ i. Misce. To be repeated every six hours.

Surgeon-General Gordon, during the siege of Paris, reports that M. Demarquay saved several patients' lives who had manifested early symptoms in the form of trismus by means of very hot air-baths followed up by the hypodermic injection of morphine. In the fully developed cases these remedies were not successful. The inhalation of the nitrite of amyl has been recommended by Dr. W. S. Forbes of Philadelphia, in quantities of three to five drops.

A case of tetanus having occurred, the bowels should first be relieved by a large enema with turpentine, after which perfect quietness in a darkened room, free from noise or currents of air, must be insisted upon, as the best means of preventing the fits of spasms. The use of the ice-bag along the spine as recommended by Todd, has afforded relief by allaying spinal irritation; but its action is very depressing, By far the largest mass of testimony has accumulated in favor of supporting the strength of the patient by the frequent administration of nutritious foods, tonics, stimulants, and opiates, the latter of which must be given in the most liberal and persevering manner. These remedies (nutrient and medicinal) must be administered both by the mouth, by the rectum, and by the hypodermic method (Hamilton). Stimulants and abundant nourishment appear to give more prospects of success in the treatment of tetanus than any other means; and with the use of chloroform, chloral, and Calabar bean to lessen the spasms, perfect rest, quietness, and freedom from currents of air, the sufferer may be able to withstand the exhaustion, and live through the acute period of the disease.

Systematic feeding of patients with liquid and strengthening food, at short intervals, has been employed with very good results in the hospital of the University at Pennyslvania. The food must be given at intervals of every two or three hours; and should consist mainly of milk, with a small quantity of alcohol. Solid food is to be avoided. Medicinally, the patient must be brought well under the influence of the

Bromide of Potassium, by an initial dose of two drachms to half an ounce, to be followed by half a drachm to a drachm every three or four hours. Thirty grains of chloral are to be given with some opium at bedtime. Chloral also is to be used when necessary in the daytime. Nitrite of amyl and chloroform should not be used continuously, but should be resorted to from time to time to stop violent spasms. If bromism should be produced, chloral and opium should be relied on; or, cannabis indica may be substituted for the bromides. Where there is much cerebral congestion a blister may be put on the nape of the neck (*Philadelphia Medical Times*, Oct. 13, 1877, and *London Medical Record*, Dec. 15, 1877, p. 500).

Nerve-stretching has been recently advocated as a remedy in tetanus. It is an operation first introduced and recommended by Nussbaum for the cure of neuralgia and other painful and spasmodic nervous affections. Within the last few years it has been tried in this country in the treatment of tetanus, by Milner, Verneuil, Callender, Eben Watson, and by Mr. Henry Morris in the Middlesex Hospital, London, and by Surgeon-Major J. J. L. Ratton, in Madras Medical College, with varying success. M. Verneuil's case occurred after a crush of the hand. Traction was made on the median nerve at the elbow, and on the ulnar near the wrist. The man completely recovered, but no particulars are given as to the duration of the case, or as to its being acute or chronic. Two cases reported by Dr. Eben Watson both died. The patient operated upon and reported by Mr. Henry Morris also died. The case differed from the others in its very great severity and acuteness; and he did not think that the progress of the case had been in the least retarded or mitigated by the nerve-stretching. On the contrary, the course of the symptoms seemed to become more severe and more rapid; and he could not help expressing his conviction that nerve-stretching in tetanus would not prove a favorable mode of treatment. It seemed to be unscientific in principle; and so far as experience went, most unsatisfactory in practice. The idea was to destroy the conductivity of the nerve-trunk, so as to cut the spinal cord off from its communication with the peripheral nerves at the seat of injury. In doing this a very severe shock or irritation was likely to be excited by the nerve-stretching itself; so that the condition of the cord, be it what it may, whether a material change, a state of excitement from irritation, or a "bad habit" induced by a "de-

praved current," seemed more likely to be aggravated than mitigated by a new and great disturbance of the same nerve channel at a spot much nearer to the spinal centre. But the operation is still sub judice (*Brit. Med. Journ.*, June 21, 1879).

On the other hand Surgeon-Major Ratton writes hopefully of the operation, aided by the administration of chloral. The case he relates is that of a strong Hindoo woman thirty years of age, in whom symptoms of lockjaw appeared after having taken a cold bath on the third and last day of a menstrual period; and in whom there were also deep syphilitic ulcers over the left ankle, some with sinuses and tense cicatricial bands. He regarded the case as one of traumatic tetanus, the symptoms of which rapidly developed into an explosion of acute tetanic violence, which he believes would have killed the patient but for the nerve-stretching; and which, at the same time, would not have saved the patient but for the chloral. The sciatic nerve was stretched with "the force required to lift a three-pound weight" for the space of two minutes, and afterwards jerked once or twice with about double that force before being replaced. Not a single spasm recurred for 18 hours after the operation, when slight spasms reappeared; and if at this time chloral had not been pressed, the spasms would have gathered strength. This is the fifth time Surgeon-Major Ratton has stretched the sciatic nerve for traumatic tetanus, and each time the operation has suppressed spasm for many hours; and if during these valuable hours of rest, chloral is properly plied, he believes the chances are that spasm will not return. He has given chloral very freely, so as to maintain narcotism for ten days. During the three critical days of the case of the Hindoo woman, on and after the operation day, she had 300 grains of chloral daily. In such cases there is a great tolerance of chloral. In this particular case he purposely refrained from operating until the symptoms of tetanus were alarming, for he desired to test the value of nerve-stretching in acute cases only, for subacute cases often get well of themselves, while acute cases never do. He doubts if any treatment will avail to cure acute tetanus unless age (say about thirty years, or prime of life) and stamina of constitution are with the physician. In this case the duration of the disease was twenty-three days. It is only the strong who can hope to battle through the exhausting effects of tonic and clonic tetanic spasms prolonged for days, generally with

insufficient nourishment, often for days at a time able to take nourishment by rectal alimentation only; yet considering the well-merited reputation of tetanus as a fatal disease, surely it is a solid gain that even a few cases may, under certain circumstances, be saved by the resources of modern medicine (Brain, Part VII., Oct., 1879, p. 483).

Tinea Decalvans.—*Definition.*—A fungous disease causing the formation of rounded or oval patches of baldness, sometimes solitary, more generally multiple. It affects the hairy scalp principally; but the beard, the genital organs, and hairy portions of the skin may also suffer.

Treatment consists—(1.) In preventing the spread of the disease circumferentially. All the hairs within a quarter of an inch of the circumference of the patch ought to be carefully extracted. The head should be washed daily with soft or black soap. All the downy hairs within the patch must be similarly removed till healthy hairs begin to grow; and some of the parasiticide lotions or ointments must be industriously used. (2.) Stimulants, or even blisters, must be applied to the surface of the bald patch after the fungus has been destroyed. A mixture of equal parts of collodium and of ether cantharidalis (collodium vesicans) is the most useful stimulant. The following lotions may be found advantageous alternately with the collodium stimulant namely:—

℞. Liquor Ammoniæ, ʒ iss; Ol. Olivæ, ʒ ii.; Ol. Macidis, ʒ ss.;Spiritus Rosmarini, ʒ iv.; Aq. Rosæ, ℥ ii.; misce bene. To be used night and morning, applied over the bald patches.

Mr. Startin recommends a lotion nearly similar, namely:—

℞. Spt. Ammon. co., f ʒ i.; Glycerine, f ℥ ss.; Tinct. Cantharidis, f ʒ i. to f ʒ ii.; Aq. Rosmar., ℥ viii.

Mr. Erasmus Wilson recommends the following:—

℞. Ol. Amygdal.; Liq. Ammoniæ, aa ʒ i.; Spt. Rosmarini; Aq. Mellis, aa ℥ ii.; misce. To use as a lotion.

Of course, none of these agents have any good result if there are no bulbs or roots of hair left whose growth can be stimulated by such application; but when hair falls off, or breaks away after debilitating illness, or from dryness of the scalp, they are often useful.

Tinea Favosa.—*Definition.*—A fungous parasitic disease, composed of cup-shaped scabs, sometimes distinct and separate, at other times indistinct or confluent. The fungi (Achorion Schonleinii Puccinia favi) are capable of being

implanted by transference from one person to another. The hairy scalp is its most common site, but the disease may be developed on the face, neck, or limbs.

Treatment.—The treatment of the various forms of favus is now very strictly determined. Some practitioners, however, still rely entirely on a constitutional treatment, such as small doses of rhubarb and soda, small doses of mercury, some preparation of iron; or on vegetable tonics, as the infusion of cascarilla or compound infusion of gentian. With such treatment, if the health improves, it is believed the fungus will spontaneously disappear. Others, again, as entirely rely on a local treatment, attempting to exterminate the disease by cauterization, or by applying some favorite ointment. As in the last described disease, the cryptogamous parasite must be destroyed, and its germs eradicated. The best method to accomplish this is, in the first instance, to shave the head and apply a poultice till all the scabs, or very nearly so, are removed; and this being affected, the whole hairy scalp, or site of the favus fungus, should be anointed with some of the following applications:—The tar ointment (ungt. picis liquidæ) has hitherto been the orthodox application. This ointment should be washed off night and morning with soft soap and water, and be as often reapplied. The head should be shaved twice or thrice a week, and where there are other children, the affected child should be isolated as much as possible, to prevent the disease from spreading. This form of porrigo, in the early stages, will sometimes yield by washing the part with the oleum terebinthinæ night and morning, and cutting the hair close. Two parts of carbolic acid to three parts of glycerine and water used twice a day, with the daily use of carbolic acid soap, have been also found of service.

But favus is more often rebellious to every mode of treatment. It has been known to yield to fomentations, or to bread poultices. The application of the lunar caustic round the patches, about a line from their outer margin, is another favorite method of treatment. In the later periods of the disease, Dr. Willis recommends—

A solution of sulphate of copper, in the proportion of seven grains to ten ounces of water; or of the nitrate of silver in the same proportions. The mild ointment of the nitrate of mercury, a salve of the black sulphuret of the same metal (sulphuretum hydrargyi nigr., ℥ j. ad. ℥ ij., adipis ʒ j); the unguentum picis, an ungent of the cocculus

Indicus (3 j. to 3 ij., adipis ℥ j.,) may be tried one after the other; and in different instances each may have the merit of the cure.

The most effectual remedy is unquestionably the eradication of the affected hairs, and the use of such parasiticides as have been already mentioned under the different forms of Tinea. Dr. Anderson finds that when favus affects the head, all treatment is absolutely useless except epilation. The other methods are merely palliative, the disease reappearing whenever the treatment is stopped. Treatment with olive oil is very useful in many cases before proceeding to epilation. After the hair is cut short, and the favus crusts removed with poultices, the parts affected should be smeared thoroughly night and morning with fresh almond oil; and once or twice a week the head should be washed thoroughly with soft soap and warm water. After a few weeks of this treatment the hair becomes less friable, and epilation is much more easily and efficiently performed, and does not cause so much local irritation. The hairs are to be removed singly with the forceps, not pulled out along with all the healthy growth in their neighborhood, as used formerly to be done by the barbarous application of the pitch-cap. When favus occurs on surfaces not particularly covered with hair it yields at once to the application of a solution of sulphate of copper, or of the nitrate of silver in water, or to the solution of sulphuric acid, as recommended by Sir William Jenner. The treatment of favus recommended by Robin and Bazin is epilation, and the applicatian of the corrosive sublimate solution, or of acetate of copper ointment (1 part to 500 lard), to kill the plant still remaining adherent to the hair follicle

Tinea Tonsurans.—*Definition.*—An affection implicating the hairs of the skin, scalp, or chin, and usually assuming a circular form. The hair becomes dry and brittle, having a tendency to crack or break across. Itching accompanies the primary eruption, which is generally at first erythematous, with slight swelling, and a parasitic fungus ultimately appears (Achorion Lebertii—Trichophyton tonsurans), which had been developing between the epidermis and the true skin. The fungus has a pure white color and powdery aspect. It covers the epidermis between the hairs, and forms around them a complete white sheath. Inflammation of the hair follicles and of the surrounding tissues occurs; and when

pus forms, the fungus is destroyed at the expense of obliteration of the roots of the hair, when perfect baldness ensues (Bazin, Anderson).

The *Treatment* of ringworm has been long one of the most difficult points in dermatology. Its principles, however, are now well understood, and few cases resist the proper measures. The essential point is to apply to the roots of the hairs a preparation which may destroy the fungus; if this can be done, the disease is cured. It is first of all necessary to remove the hair. This is in part generally accomplished before the case comes under treatment, by the course of the disease; if it has not been sufficiently done, "epilation" can be accomplished by a chemical agent, or by extraction with pincers. The forceps most suitable for this little operation are those about three inches long, having a weak spring, so that the hand may not be fatigued in using them. They should be made so that the two extremities come together very exactly, and do not slide the one upon the other. Each extremity should be a couple of lines broad, so that a fasciculus of hair may be caught up at one time when required; and should be furnished on the inside with very fine, but at the same time blunt, transverse denticulations, so that they may not cut across the brittle hairs. M. Bazin recommends an ointment composed of lime and carbonate of soda, of each one part, and thirty parts of lard, as an agent to remove the hair. The oil of cade, however, appears to be the best depilatory known, and with this mode of treatment epilation with the pincers may be combined. If the hairs are pulled out in the proper direction, there is very little pain, especially after the sensibility of the skin has been blunted by the use of the oil of cade. The removal of the hairs permits a "parasiticide" solution to be applied to the hair follicles, within which are the prolific spores of the fungus. For this purpose M. Bazin recommends either a solution of bichloride of mercury (1 part to 250 of water), or an ointment of the acetate of copper (1 part to 500 of lard), about two grains to an ounce of water; and a little alcohol or muriate of ammonia should be used to facilitate the solution of the mineral. The oil of cade should be mixed with glycerine in the proportion of half a drachm to a drachm of the oil to an ounce of glycerine. Kuchenmeister's experience shows that the alcoholic solutions act most powerfully. Dr. Parkes used, with excellent effect, a solution of the pernitrate of mercury, about one part to thirty or forty of water. This is, however, a very

powerful remedy, and is to be cautiously used, as it easily blisters the scalp; also, an ointment composed of sulphate of copper (one part), alum (three parts), and lard (twenty to thirty parts, according to the age of the patient). Probably a better and safer parasiticide than any of these is sulphurous acid (Sir William Jenner). Diluted with equal parts of glycerine, or with two or three parts of water, it is to be applied on a piece of lint to the affected part, and covered with oil-silk to prevent evaporation (*Med. Times*, Aug. 20, 1853). The following formula for sulphur may also be used:

℞. Sulphur, ℥ iv.; Hydrarg. Ammon.-chloridi, Hydrarg. Sulphuret, a a ℥ ii.; Ol. Olivæ, ℥ i.; Adipis, ℥ iv.; Creasoti, mv. It must be well rubbed into the patches of tinea.

Or, a lotion of one ounce of hyposulphite of soda in twelve ounces of water (Dr. Tilbury Fox). The internal use of cod-liver oil at the same time that sulphurous applications are used, has also been recommended (J. H. Bennett). My friend, Staff-Surgeon Dr. Davidson, has found the following method of treatment to succeed, namely: to apply tincture of iodine to the affected parts twice a day for fourteen days, and afterwards ointment of the bichloride of mercury (Corros. sublimat). After the third or fourth application of the iodine, the disease ceases to spread, and the hair (which may have been thinning rapidly) ceases to fall off. A kind of crust is formed by the application of the iodine, which scales off in the form of a scurf when the ointment is applied. Soft soap (black soap) applied to the patches of disease at bedtime, and washed off in the morning, fits the parts for the better reception of other local remedies. Washing the head before medical treatment is begun, sometimes tends to spread the disease to parts of the head which had been sound before. Goa powder, called also Bahia powder and Araroba powder, first introduced to European medical practice by Sir Joseph Fayrer, has also become a remedy, made into an ointment composed of 20 grains of the powder, 10 drops of acetic acid or common vinegar, and an ounce of benzoin ointment. It is applied by means of a hair pencil (Dr. Da Silva Lima). Its active principle, chrysophanic acid, has the objectionable property of staining; but it forms an efficient ointment in the treatment of some forms of ringworm, 10 to 60 grains to an ounce of lard being melted together in an oil-bath.

The iodide of arsenic in doses of one-tenth of a grain, gradually increased to one-fourth of a grain for an adult; one-fifteenth of a grain for a child six years old; and from one-

eighteenth to one-twentieth for younger children, improves the general health (Neligan, on Diseases of the Scalp).

Tinea Versicolor.—*Definition.*—A fungous affection of the skin, characterized by one or more broad irregularly-shaped patches of a yellow or yellowish-brown color, occurring most frequently on the front of the neck, breast, abdomen, and groins, having a predilection for those parts of the body covered by clothing. The patches do not generally rise above the surface of the skin; and there is usually some degree of itching.

Treatment.—Local applications constitute the principal part of the treatment. A solution of the bichloride of mercury, in the proportion of two grains to an ounce of water, applied over the affected parts once or twice daily, is generally effectual in destroying the progress of the fungus. Mercurial or sulphur baths have a similar effect, either singly or combined, care being taken to avoid salivation. The use of black soap night and morning is recommended by Dr. Anderson, or the use of the following mixture:—

℞. Bichloridi. Hydrarg., ℈i.; Alcoholis, ℥ss.; Saponis Viridis, et Aquæ distillatæ, a a ℥iiss.; Ol. Lavandulæ, ℈i.; misce. To be used night and morning in the same way as the black soap; but if the gums get tender, its use must be suspended.

Great attention must be paid to cleanliness. The patient should change his flannel clothing very often, and should not sleep in the same flannels that are worn during the day.

Tongue, Inflammation of—*See Glossitis.*

Tongue, Ulcer of the.—*Definitio* .—Inflammation, simple or specific, terminating in ulcers.

The *treatment* of syphilitic ulcerations of the tongue varies according to the severity and form of the affection. In the secondary varieties the local application of solutions of chloride of zinc, with washes of chlorate or permanganate of potash, are frequently sufficient; but sometimes the application of solid nitrate of silver is desirable. In the tertiary forms of syphilitic ulceration, solid nitrate of silver must be applied daily, and large doses of iodide of potassium frequently administered. In mercurial ulcers, constitutional treatment of a tonic character, disinfectant gargles, and generous diet are indicated. It may here be mentioned that in all cases of diseases of the tongue, all irritants, as spices and pepper,

as well as smoking, sucking of lozenges, or any other measure calculated to increase the flow of saliva, must be strictly prohibited.

Tonsils, Enlarged.—*Definition.*—Hypertrophy of the tonsil, generally with induration.

Treatment.—Although enlarged tonsils may be the result of constitutional derangement, they in themselves also interfere with the proper development and health of the body. Thus, they constantly obstruct the free passage of air into the chest, and thus interfere with the due development of the chest and the proper oxygenation of the blood; they give rise to an unhealthy secretion in the mouth; they sometimes interfere with sleep; and, in the case of adults, they subject the patient to repeated attacks of quinsy, with its associated conditions of difficult deglutition and pain.

The importance of removing the diseased and redundant portions of the affected gland will be at once evident. Tonics, sea-bathing, and other constitutional means, do not appear to exercise any beneficial effect in either diminishing or arresting the growth of tonsils predisposed to hypertrophy; nor are the applications of caustics of the slightest value, unless they are so strong as to destroy a large portion of the gland. It is better, therefore, to excise the enlarged tonsil in all cases when the respiration is affected, or where there is disease of the follicles predisposing to frequent attacks of inflammation and suppuration. The best method of removal is with a guillotine or wire écraseur. Dr. Mackenzie has lately invented a double guillotine, by which, in one operation, both tonsils are removed. This is a great desideratum in the case of children; as, after one tonsil has been removed, the practitioner has great difficulty in inducing his little patient to allow a second similar operation. Hæmorrhage seldom happens after removal of the tonsils; should it occur, ice will generally check it; and if this does not answer, a few half teaspoonfuls of a fluid containing tannic and gallic acids in suspension, slowly sipped, will be certain to stop all bleeding.

Tremor, Mercurialis—*See Mercurial Poisoning*

Typhlitis.—*Definition.*—Inflammation of the cæcum, which may lead to ulceration of its mucous membrane, and not unfrequently of the entire wall of the bowel.

Treatment.—A full dose of castor-oil (℥ ss. to ℥ i.) is in-

dicated if vomiting does not exist. Drastic purgation is not to be thought of. The use of enemas through long rectum tubes are the most efficient means of relief, which may throw up four or five pints of liquid in a continuous stream, so as to soften, crumble down, and set in motion the fæcal collections. Salt, castor-oil, or turpentine, or milk ought to be added to the fluid injected (Niemeyer). Any effusion left may be resolved by the use of iodide of potassium. Leeches may be required if pain on pressure continues in the iliac region.

Typhoid Fever—*See Enteric Fever.*

Typhus Fever.—*Definition.*—A continued specific fever, having a duration of from ten to twenty-one days, usually fourteen, characterized by an eruption on the skin, of a general dusky mottled rubeoloid rash, appearing between the fourth and seventh days, at first slightly elevated ; disappearing on pressure, but, after the second day, persistent, and remaining so for eleven or twelve days ; and often becoming converted into true petechiæ. Languor and weariness are prominent from the first, gradually passing into sluggishness of intellect, with confusion of thought, followed at the end of the first week by delirium, stupidity, oblivion, and complete prostration. In still more severe cases, somnolence, stupor, and sometimes coma, with tremors, subsultus, and contracted pupils supervene, when prostration becomes profound. The disease may terminate favorably from the thirteenth to the seventeenth day. If it proves fatal, it is generally between the twelfth and the seventeenth day, leaving no specific lesion in any part of the body, beyond hyperæmia and blood changes, softening and disintegration of the heart and voluntary muscles, hypostatic congestion of the lungs, atrophy of the brain, and œdema of the sub-arachnoid and pia mater. Typhus fever is eminently contagious, and occurs in strongly-marked epidemics (Murchison).

General Indications for Treatment.—They may be summed up as a combination of measures to reduce excessive heat, to insure proper excretion, and to act on the semi-paralyzed nerves; and, "every remedial agent which shall be found to promote the elimination of urea, without increasing the destructive metamorphosis of tissue, will deserve a trial in typhus" (Murchison, p. 268). To reduce heat and to regulate elimination are but secondary indications in the treatment of typhus fever, compared with the influence which

must be exercised over the nervous system ; and one of the greatest objects of therapeutics at the present day is to find substances which will act on the nerves and the blood, and restore them in some way to their normal action.

Special Indications for Treatment.—Our objects in the treatment of typhus fever should be,—(1.) To neutralize the poison and to correct the morbid state of the blood ; (2.) To promote elimination of the poison and the products of the destructive metamorphosis of tissue ; (3.) To reduce the temperature ; (4.) To sustain the vital powers, and to obviate the tendency to death ; (5.) To relieve the distressing symptoms ; and, (6.) To avert and subdue local complications (Murchison, p. 265).

1. In the belief that the morbid condition of the blood in typhus fever may be due to the presence of ammonia in some as yet unknown combination, the use of mineral acids has been recommended by many physicians. Murchison considers their beneficial effects in typhus as undoubted, and in this opinion he is confirmed by the experience of Huss of Stockholm, Haller of Vienna, of Mackenzie, Chambers, and Richardson, in this country. Huss recommended dilute phosphoric acid in doses of twenty-five to forty drops every second hour, believing that the phosphorus exerts a special influence on the central organs of the nervous system. But in the advanced stage, and especially if sweating, numerous petechiæ, or ecchymoses be present, he has recourse to dilute sulphuric acid in doses of fifteen to twenty drops every hour or every second hour. Dilute hydrochloric acid is preferred by Drs. Murchison, Richardson, Mackenzie, and Chambers. It may be given to the extent of half a drachm of the dilute acid, mixed with a like quantity of the tincture of syrup of orange every three hours. Dr. A. P. Stewart has used with advantage the tinctura perchloridi ferri, in doses of thirty minims every three hours. Dr. Murchison recommends nitro-muriatic acid. He prescribes twenty minims of hydrochloric acid with ten minims of nitric acid every three hours each dose being diluted with the patient's drink, such as barley water sweetened with syrup of ginger and flavored with lemon peel. But if the "typhoid state" is developed in a marked manner, dilute sulphuric acid, in doses of fifteen to twenty minims every three hours, in combination with ether, and small doses of quinine, are to be had recourse to, as in either of the following formulæ:—

℞. Acid. Hydrochlor. dil., mxx.; Acid. Nit. dil. mx.; Spt. Æther. Nit., mlx.; Liquor. Cinchonæ, mxxx.; Decoc. Scopar. comp., ℥ i.; misce. A draught so composed may be administered every third hour.

Or, ℞. Quiniæ Sulph., gr. ½; Acid. Sulph. dil., mxx. ad mxxx.; Æther. Sulph. mxv. ad mxxx.; Syrup Aurant., mlx.; Decoc. Scopar. comp., ℥ i.; misce. A draught so composed may be administered every third or fourth hour.

When the acids are cautiously administered in smaller doses, in conjunction with a few minims of solution of muriate of morphia (if the bowels be irritable), sweetened with syrup of orange peel and diluted with water, the draught is generally relished, and the tongue from being dry, and hard, and brown, becomes moist and clean (Perry).

2. Perhaps the best general method to insure proper excretion is to supply the system with abundance of diluents containing alkaline salts, which are not given in the food, and to maintain the action of the kidneys, the bowels, and the skin. Plenty of pure drinking water tends to increase the flow of urine, and so helps to wash away the products of metamorphosis. Chloride of sodium, the alkaline salts of potash, and probably also those of soda, tend to aid the formation of urea, and its elimination. Dr. Murchison has been in the habit of ordering large quantities of salt to be mixed with the patient's beef-tea. In most cases it was greatly relished, and apparently beneficial.

Purgatives tend to insure a proper excretion, probably by removing from the blood some of the abnormal products formed in fever. The great relief which sometimes follows their use, as well as the fall of temperature, seems to show this. Where there is retention of urea, they aid its elimination, because we know that urea passes off sometimes by the mucous membrane of the stomach and bowels. The patient should be allowed to drink freely of water; and five grains of the nitrate of potash, or a small dose of the tincture of digitalis (miv. to mx.), may be given with each dose of the nitro-muriatic acid already mentioned. Dr. Murchison recommends nitre whey, prepared by boiling ℥ ii. of nitre in a pint of milk, and straining; or a drink prepared by dissolving ℥ i. to ℥ ii. of the bitartrate of potash in a pint of boiling water, flavored with lemon peel and sugar; but if the patient be very prostrate, or if the bowels be relaxed, 15 minims of the spirit of nitrous ether is to be substituted for the nitrate of potash

Tea and coffee have been recommended in the stupor of typhus ; and it is probable that their good effects are due to their power of eliminating the urea already formed in the blood (Dr. Parkes). The coffee may be given as an extract, or as a strong infusion of the powdered berry made in the ordinary way. Tea has been recommended as an infusion of the green tea leaf. As beverages or common drinks in fever, both tea and coffee have been found to relieve the headache, the pulse becoming fuller and stronger under their use. Bocker, L. Lehmann, and Hammond, all agree in showing that in health they greatly lesson the urea (Parkes On the Urine, p. 76). To restrain excessive metamorphosis it has been proposed to administer coca—the dried leaves of the erythroxylon coca—which, when indulged in by a healthy person, prevents for a time the feeling of fatigue, and diminishes the amount of urea (*to be?*) excreted. Hence its possible value as a therapeutic agent (M'Bean, *Brit. Med. Journ.*, March 10, 1877, p. 291). A drachm to a drachm and a half of the tincture is to be given in water every four hours ; or an infusion of the leaves may be taken when thirsty.

The action of the bowels is to be maintained by emetics and laxatives. In the first instance, if the patient is seen early—*i. e.*, before the sixth day—an emetic of ipecacuanha (one scruple), and of antimony (one grain), or of carbonate of ammonia (two scruples), in place of the antimony, is to be administered. If the bowels remain confined after the emetic a mild laxative of rhubarb and calomel, or of castor-oil, is to be given ; and failing these, or in place of them, a simple enema is to be administered (Murchison, p. 277, 2nd Ed.). The advantages of emetics are, that they relieve the patient to some extent by mitigating or removing headache and general pains. They also reduce the temperature, abate thirst, and quiet gastric disturbance. Emetics, however, are contra-indicated if the patients are unusually weak, or if the disease has advanced beyond the first week. Laxatives and enemata, however, ought to be repeated daily, if required, so as to secure a motion of the bowels once a day. In this respect the treatment is different from the treatment which ought to obtain in enteric fever. Excrementitious matters in the intestines must be removed by gentle aperients. The dark offensive matters accumulated in the intestinal canal in typhus fever may have a secondary deleterious effect on the system if they are allowed to remain. Purging, however, is

to be avoided, and fresh-made compound rhubarb pill mass, which tends to stimulate the peristaltic action of the intestines, is as good a medicine as can be given, followed, if necessary, or alternated, by a small dose of castor-oil, or by a simple enema.

Diaphoresis is not to be encouraged beyond the insensible transpiration of the skin, to remove which the wholesome detergent of tepid water sponging is most beneficial. It ought to be used twice or three times daily, and quantities of Condy's fluid or of muriatic acid (3 i. ad Oj.) may be mixed with the tepid water (Murchison). The measure is a good one in a hygienic point of view; and it contributes—

3. To reduce temperature, the external application of cold water, as was once practised to an extreme degree by Currie (and originally recommended by Dr. Robert Jackson), has been again recently advocated. In health such an application as that of cold water has a great effect in reducing temperature, and tends to increase metamorphosis of tissue (Lehmann, Sanderson).

4. The vital powers are to be sustained by food in the first instance. For this purpose, nourishment ought to be given often, and at stated intervals—at least once every three or four hours after the fourth day of the fever. Even if the patient is asleep, or seems to be so, he must be roused at these stated intervals (not oftener) to take his food or his stimulants. But if, towards the period of the crisis, the patient appears to be in a sound sleep, he ought not to be disturbed. The indications for treatment just described apply to the earlier stages of the fever, up till about the fourteenth day. Beef tea, broths, meat juice, bread pudding, arrow root, jellies, milk, eggs, and alcoholic fluids, are the foods on which the typhus fever patient must be sustained. Alcohol in small quantities, as well as tea, coffee, lemonade, soda-water, water poured from standing over oatmeal, and taken cold or after boiling and then cooling, and other fluids, have a directly stimulant action on the nervous system and on the organs of circulation; at the same time, alcoholic drinks diminish the metamorphosis of the tissue elements. Few remedies, however, require more discrimination in their use; and the following guides for their administration are compiled from the careful observations of Dr. Murchison (p. 288, 2nd Ed.):—(1.) Patients under twenty years of age do best without alcohol; but most patients over forty are benefited

by alcohol from the commencement of the second week of the illness, or earlier; while persons of intemperate habits require alcohol earlier, and in greater quantity than others. (2.) In individual cases the indications for alcoholic stimulants are mainly derived from the state of the organs of circulation; and the profession is indebted to Dr. Stokes (1839) for pointing out the importance of cardiac and radial pulses as guides for the use of alcohol in fever. The indications are,—(*a*.) Extreme softness and compressibility of the pulse. An undulating, irregular, intermitting, or imperceptible pulse more imperatively demands stimulants than a merely rapid pulse. So also an abnormally slow pulse—*e. g.*, 40 to 60—is a stronger indication for stimulation than a quick pulse. (*b*.) When the cardiac impulse becomes weak, and when the first sound is impaired or absent, a liberal allowance of stimulants is demanded; and in every case where there are doubts as to the propriety of giving stimulants, the heart must be examined with the hand and with the stethoscope, because the state of the pulse alone is not sufficient to judge from. The impulse may be found to diminish progressively from the fifth or sixth day to the termination of the disease; and for several days prior to death or recovery it may be entirely absent. The systolic sound of the heart becomes daily more feeble, and ultimately may be quite inaudible, leaving the second sound clear and distinct; and before the first sound is altogether lost, it may become so short that it is difficult to distinguish it from the second sound. If the action of the heart be rapid, its sounds may thus come to resemble closely those of the *fœtus in utero*. A violently excited heart all through the disease, with cold surface, cold breath, and feeble pulse, demands wine from the first; but even with its judicious use the prognosis in such cases is extremely doubtful (Stokes, Graves, Murchison). Other indications for stimulants may be stated as follows:—(*c*.) If by raising the patient to his semi-erect position a tendency to syncope is induced, or great prostration is manifest, with diminished strength and volume of the pulse, then stimulation must be commenced. (3.) The darker and more copious the eruption, the more is the necessity for stimulants, especially if petechiæ are numerous. (4.) Profuse perspiration, with no improvement in the general symptoms, requires an increased supply of stimulants; but a burning dry skin is in itself an indication against alcohol. Coldness of the extremities is an indication for alcohol, especially when at the

same time the temperature of the trunk is considerably elevated. (5.) Stupor, low delirium, subsultus, involuntary evacuations,—symptoms generally of the typhoid state, are indications for the liberal administration of alcohol ; but the propriety of giving stimulants in delirium depends on the state of the pulse. If, on the trial of stimulants, the patient becomes tranquil, they do good, and may be continued ; if the reverse, their use must be suspended. (6.) A dry brown tongue is an indication for wine or brandy ; and if it becomes clean and moist at the edges under the use of either, such stimulation is beneficial. (7.) Complications, as a rule, increase the necessity for stimulation ; and large quantities of stimulants are called for if pyæmia, erysipelas, bronchitis, pulmonary hypostasis, pneumonia, inflammatory swellings, bed sores, or local gangrene shonld supervene. (8.) Alcohol, as a rule, is contra-indicated if there be severe darting or throbbing headache, or acute noisy delirium, especially when these symptoms co-exist with great heat and dryness of the skin, flushing of the face, suffusion of the eyes, and little or no impairment of the cardiac and radial pulse. When alcohol is given under such circumstances, it should be restricted to the intervals of the paroxysms of delirium. (9.) Scanty urine of low specific gravity, containing little urea or much albumen, and suppression of urine, are in themselves indications against the use of alcohol.

The effects of alcoholic stimulation require to be most carefully watched throughout the whole period of their administration. Four ounces of wine in the twenty-four hours is enough to begin with ; for if the blood be overloaded with the products of alcoholic ingestion, further alcoholic stimulation will lead to increased contamination, and it is rare that more than eight ounces of brandy in twenty-four hours are necessary. There are differences in the demand for stimuli in the typhus of different countries, and in the fever of different epidemics. Dr. Wood tells us that in America cases requiring wine or brandy are extremely rare. Dr. Stokes says that the typhus in Ireland demands large quantities of wine. In Scotland, also, wine is the great mainstay in the treatment of typhus fever, requiring often to be administered largely. Port, sherry, marsala, madeira, brandy, gin or whiskey, possess no peculiar advantages apart from the alcohol contained in each. Spirits contain 50 to 60 per cent. of alcohol, sherry and port from 17 to 24 per cent., and malt liquors from 6 to 8 per cent. Two fluid ounces of spirit will thus be equal to

five or six of wine, and spirits ought to be given diluted ; and if the prostration is great, and when the skin is cold and covered with perspiration, the best stimulant is brandy or whiskey punch, given as hot as it can be taken, in small quantities at a time, frequently repeated. In urgent cases stimulants ought to be given every hour ; and, as a rule, a larger quantity will be required during the night and early morning than in the daytime, for it is usually towards morning that temperature tends to get low, and the vital powers are at their lowest ebb (Murchison). At the same time it must ever be remembered, as Sir William Jenner justly observes, that " in no disease is the advantage of refraining from meddling more clearly displayed than in typhus fever ; and in no disease is the prompt use of powerful remedies more clearly indicated. It is in determining when to act and when to do nothing, that the skill of the physician as a curer of disease, in the case of fever is shown. Interfere by depletion or stimulation when nothing should be done, and the patient is lost, who, if it had not been for you, would have been safe. Refrain from depletion or withhold stimulants when the one or the other is required, and the patient sinks into that grave from which judicious treatment might have saved him."

A large, well-ventilated apartment, fresh air, a cool, but not a cold atmosphere, quiet, abstinence from solids, and a free supply of water, milk and water, coffee, weak broth, beef tea, according to the discretion of the physician, are the conditions and remedies on which a large majority of cases will recover. But the patient must be constantly and carefully watched. There is no disease where the attentions of a well instructed nurse are more demanded ; and there is no class of patients in hospitals so apt to be neglected by the attendants, especially as to the regular administration of the remedies prescribed. It is not uncommon to find that the wine allotted for the day has been administered at a draught, when it ought to have been given in small quantities at regular intervals, with care and watchfulness. How often do we see almost hopeless cases recover under the careful nursing of an intelligent person, regulated by the dictates of common sense and conscientious solicitude, guided by the judicious directions of a physician who knows well the nature of the disease with which he has to deal ! The nurse ought to note down the hours at which food or medicine has been given, or any remarkable change in the symptoms. She

might also, if she were instructed, take observations with the thermometer, for the information of the physician at each visit. Dr. Murchison recommends that, in urgent cases, food and alcoholic stimulants must be persisted in as long as the patient is able to swallow; and even when he can no longer swallow, the case is not to be given up; for he has seen cases where life appeared to be saved by frequent enemata of beef-tea and brandy after the patient had ceased to take anything by the mouth.

Of special symptons which call for relief, the most urgent is generally headache. If headache should persist after delirium sets in, with a rapid pulse (*e. g.*, 120), attended with nausea, some saline, effervescing mixture, with four drops of dilute hydrocyanic acid, may be given every six hours. In the persistence of headache, dry cupping, such as has been recommended by Dr. Sieveking, might furnish an aid to guide the treatment, by determining whether it may not depend upon repletion or upon emptiness of the cranial vessels. When applied to the nape of the neck, dry cupping may afford relief, if repletion has to do with the continuance of headache. Under such circumstances the face is generally flushed, the conjunctivæ red, and the skin dry and hot. If the dry cupping does not relieve such symptoms, the hair must be shaved off the head, and the scalp covered with crushed ice inclosed in a bullock's bladder, or recourse may be had to cold affusion. The application of cold water is best effected by bringing the patient's head over a basin at the edge of the bed, and having a vessel arranged so that the cold water (at 40° or 50° Fahr.) may drip continuously from a height of two or three feet upon the head (Murchison). A skein of worsted arranged in the water, with the ends overhanging the basin will maintain a constant flow of water from the basin, which may be directed to fall upon the scalp. Dr. Murchison recommends that in young subjects two or four leeches may be applied to the temples; and in aged or infirm persons warm fomentations to the head are advisable (Graves and Murchison); a double fold of lint moistened in warm water and vinegar, is to be laid over the scalp, covered with oiled silk, and the application renewed every three hours. But if anæmia is the cause of the headache, as may be suspected from the state of the vascular system, then stimulants are called for. Four to six ounces of wine may be given in divided doses during the day and night of twenty-four

hours. If the pulse continues to get weaker, the wine must be increased. It must be borne in mind that the headache of typhus naturally abates about the eighth day; but it is sometimes rendered worse by sleeplessness; and if the remedies for headache do not relieve it, nor tend to induce sleep, then opiates may be given, combined with antimony, if the skin be dry and hot and the pulse of good strength. Dr. Murchison thinks that the employment of opium in typhus is more dreaded than it ought to be. The dose of opium should be given about 9 P. M., followed in two hours by half the dose if the patient does not sleep. The form of the opiate and dose may be ten to twenty minims of Battley's solution, or fifteen minims of the solution of the bimeconate of morphia, or five grains of the opium pill or compound soap pill of the British Pharmacopœia. Dr. Murchison teaches us to distinguish two forms of delirium as a guide to the administration of opium, combined with antimony in the one form, and with ethereal stimulants in the other. When the condition of the patient approaches more to that of delirium ferox, the cardiac and radial pulses being of good strength, after trying the cold affusion, and remedies already mentioned, then opium combined with antimony ought to be given without delay, as in the following prescription:

℞. Liq. Opii. Sedat. (Battley's) m lx; Antim. Tart., gr. if ad gr. ii.; Aquæ Camph. ℥ vi.; misce A large spoonful o. this mixture is to be given every hour until sleep is induced.

On the other hand, if the delirium approaches in its character that of delirium tremens, the radial pulse is usually quick and feeble, the cardiac impulse diminished, and the first sound of the heart more or less inaudible, then the opium must be combined with alcoholic or other stimulants, the amount being regulated by the state of the pulse and heart. Dr. Murchison suggests the following prescription:

℞. Liq. Op. Sed. (Battley's) ʒ ss.; Spt. Ætheris, m lx.; Aquæ Camph., ad ℥ iii.; misce. Commence by giving two tablespoonfuls of this mixture, and repeat it every hour till sleep is obtained.

Or opium to the amount of half a grain may be combined with three grains of camphor in a pill, and such a pill may be repeated, if necessary, every two hours.

Cases requiring such treatment ought to be seen at least three or four times daily. If dyspnœa is urgent, and lividity of the face betoken pulmonary lesion, defective arterialization of the blood and venous congestion of the brain, opium

in any form must be withheld; and it must likewise be discontinued if any tendency to stupor supervene, or if there be any marked contraction of the pupil—*e. g.*, "the pin-hole pupil" of Dr. Graves. This physician proposed the use of belladonna in such cases, and he, as well as Dr. Benjamin Bell and Dr. Murchison, bear their united testimony to its usefulness. Dr. Graves prescribed it as follows:

℞. Ext. Belladonnæ, gr. i.; Ext. Hyoscyami, gr. vi.; Pil. Hydrar., gr. xxx.; misce. This mass being divided into six pills; one may be given every three hours.

Dr. J. Harley recommends 15 to 20 minims of the tincture every four hours; or to inject hypodermically from $\frac{1}{60}$ to $\frac{1}{40}$ of a grain of sulphate of atropia. But digitalis is the remedy on which Dr. Murchison places most reliance. From 15 to 20 minims of the tincture; or from 6 drachms to 3 ounces of the infusion may be given in the twenty-four hours (l. c., p. 284). Musk and camphor are stimulants of very great value, which have fallen into unmerited neglect. Camphor may be given in emulsion in doses of five grains every two hours; or in the form of an enema in doses of a scruple. Huss and Graves also bear testimony to the good effects of these remedies. In a case of complete sleeplessness Dr. Graves gave the following combination of these medicines with the best results:

℞. Antim. Tart., gr. ss.; Pulv. Moschi, gr. x.; Camphor, gr. v.; Tinct. Opii., mx; Aquæ dil., ℥ i.; misce. A similar draught may be given every two hours; and after the third dose the patient will generally fall into a quiet sleep.

The hydrate of chloral has been found to be preferable, in certain circumstances, to opium in typhus fever. As a sedative and hypnotic, it is successful in every form of cerebral excitement; but it seems to have a more immediate and permanent curative action on cases of acute delirium at the acmé of typhus, than in the delirium tremens of the second and third weeks, when the blood is loaded with the products of the fever. It is also of use where there is bronchitis and congestion of the lungs, when opium may not be given. With regard to the dose, 40 grains is found to be a poisonous dose in typhus, producing depression and irregularity of the heart's action. All the benefits without the dangers may be obtained with 20 grain doses for adults; 2 grains for children of one to two years; 3 grains for three years; and 10 grains for children from nine to fourteen years. It is to be

given in an ounce of water, sweetened with half an ounce of syrup (Dr. J. B. Russell).

When there is danger of stupor passing into profound coma, the best effects may result from a small cupful of a strong infusion of coffee, given every three or four hours, employing at the same time such measures as have a derivative action on the kidneys—*e. g.*, dry cupping; mustard poultices to the loins; wet compresses of thickly folded flannel, wrung out of hot water, passed round the loins, and covered with a piece of water-proof cloth, retained in its place by a bandage or towel. These remedial agents are all the more necessary if the urine contain either blood or albumen. At the same time free evacuation from the bowels should be secured by a purgative, or by a turpentine enema. If the lethargic state supervenes early, and before there is great exhaustion, the douche has been found to be of great service as a stimulant, provided there be considerable elevation of temperature, and little irritability of the nervous system (Todd, Armitage, Murchison).

The region of the bladder should be examined by the physician at least two or three times daily, by manipulation and percussion, and if there be the slightest doubt as to its containing urine, the catheter must be introduced.

Urine, Suppression of.—*Definition.*—A complete or partial suspension of the functions of the kidney, by which the quantity of urine is greatly in defect, or its secretion entirely suppressed.

Treatment.—When suppression does not depend on any morbid condition of the blood, and is primary, the patient should be placed in a warm bath, and be purged by substances that act on the kidney, as the neutral salts. Indeed, if the case be slight, purging by any cathartic is sufficient. If this method should not succeed, m x. to xxx. of the tinct. cantharides should be tried every four or six hours, according to the urgency of the case. Many physicians prefer a tonic treatment, as the camphor mixture and ether, or the tinct. ferri muriatis m xxv. to l. Belladonna is a useful remedy and so also is digitalis applied as a fomentation of the fresh leaves over the abdomen; or an ounce of the tincture may be added to a warm linseed poultice, or the dried leaves may be made into a poultice, to which half an ounce of the tincture may be added. It is chiefly in cases in which the pulse is rapid that digitalis is suitable; and the urine will not begin to flow till the digitalis has reduced the action of the heart

(J. D. Brown, in *Medical Times*, January 25, 1868). In the suppression of urine attending cholera, Dr. E. Goodeve recommends the following :—

℞. Tinct. Digitalis, m v. to m x. ; Spr. Æther. nit., m xxx. ; Liq. Ammon. Acet., m lx. ; Aq., f ℥ i. ; misce. Such a draught may be taken every three or four hours. (Reynold's System of Medicine, Vol. I., p. 183.)

The treatment of symptomatic anuria resolves itself entirely into that treatment which will remove the primary disease.

Urticaria.—*Definition.*—An eruption of little solid elastic eminences, roundish or oblong, pale in the centre, and red at the circumference. These are commonly called "wheals," similar to the results from the strokes of a lash.

Treatment.—Emetics and purgatives in the first instance ; afterwards the correction of faulty digestion. The surface of the eruption may be dusted over with flour ; or the following lotion may be used :—

℞. Carbonatis Ammoniæ, ℥ i. ; Plumb. Acetatis, ℥ ii. ; Aquæ Rosarum, ℥ viii. ;

In the chronic form, especially associated with uterine irritation or ovarian tumors, I have found bromide of potassium of much benefit. It ought to be given in a full dose of ten grains twice daily, which is to be doubled at bedtime. Quinine is also useful, combined with rhubarb and carbonate of ammonia.

℞. Sulphatis quiniæ, gr. xii. ; Solve in Glycerinæ, m ii. ; Pulv. Rhei., gr. xxiv.; Carb. Ammon., gr. xviii.; misce et divide in pil. xii.—Signa, "One three times a day."

Uvula, Elongated.—*Definition.*—Relaxation or paralysis of the uvula, which becomes so elongated that its top may touch or rest upon the surface of the tongue.

The *Treatment* of elongated uvula must depend on the degree of relaxation present, and the previous duration of the affection. Slight and recent cases often get well by the persevering use of astringents. Gargles, containing tannin, rhatany, or perchloride of iron, lozenges, and local applications, may all be used with advantage ; and, indeed, it is found convenient to brace up the mucous membrane by employing these different methods at the same time. When the uvula has been considerably relaxed for some months the elongated portion should be snipped off. While hardly any slight affection of the throat produces such serious symptoms as elongation of the uvula, there is no slight operation that

gives such complete and permanent relief as its removal. Should any hæmorrhage follow the operation, treatment similar to that recommended after excision of the tonsil must be adopted.

Varicella—*See Chicken Pox.*

Variola—*See Small-Pox.*

Vertigo, Auditory.—*Definition.*—A condition characterised by sudden attacks of vertigo, paroxysmal in their occurrence, depending on a morbid state of the organ of hearing, and especially with lesions of the semicircular canals.

Treatment.—Of practical importance in the treatment of labyrinthine vertigo, and at the same time in illustration of its pathology, it is to be remembered that the tympanum is supplied with arterial blood from the carotid, and its veins discharge into the jugular; that the labyrinth is supplied by the vertebral, and its veins discharge into the superior petrorsal sinus; that the vertebral artery derives many of its vaso-motor nerves from the inferior cervical ganglion; and that these nerves communicate with the brachial plexus. The same ganglion furnishes the inferior cardiac nerve—the principal inhibitory nerve of the heart. Besides these connections a fasciculus is given off from the pneumogastric, near the recurrent laryngeal, to the lower cervical ganglion. We have, therefore, in this ganglion an organ connecting the upper extremities, heart and upper portion of the digestive tract, with the labyrinthine circulation. From any irritation there may consequently arise a diminished inhibition, which will relax the walls of the vertebral artery, and so cause pressure on the endolymph with consequent vertigo (Woakes, *Chicago Med. Jour. and Exam.*, Nov. 1878).

Hence such vertigo does not necessarily imply previous disease of the ear. Gunshot wounds of the upper extremities are often followed by dizziness (Weir Mitchell). Quinine, in large doses, and tobacco diminish vascular tonus; while bromine, the bromides, and especially hydrobromic acid, stimulate vascular innervation. Hence the antagonistic effect of the latter on the tinnitus aurium caused by the former (quoted by Mr. D'Arcy Power, *London Medical Record*, April 15, 1879, p. 152).

The treatment of labyrinthine vertigo, the result of destructive lesions, can be but palliative; but auditory-nerve vertigo, due to irritative lesion, may be more or less relieved. Absolute rest is the first essential. The direct treatment of

labyrinthine affections is a subject for the special aural surgeon; and it is obvious that when symptoms point to the existence of any disease or irritation in the accessible parts of the ear, special treatment should be directed to those morbid states. When there is evidence of an irritative process, blistering behind the ear sometimes affords very marked relief to the vertigo. Occasionally there may be evidence of a constitutional condition on which the aural disturbance is dependent. In some cases there may be reason to believe that a gouty change in the membranous labyrinth is the cause of the morbid action (Hinton, Gowers). Marked relief is afforded under these circumstances by colchicum and potash. In rare cases the vertigo may depend on a syphilitic inflammation of the labyrinth. Such a case has been described by Moos of Heidelberg. One of the most severe forms of paroxysmal vertigo which Dr. Gowers has seen was in a child, with almost complete deafness and every sign of inherited syphilis. In all syphilitic cases the specific treatment for syphilis is, of course, required.

It has been remarked that certain drugs have a marked influence on the organ or nerve of hearing. The effect of quinine induced Charcot to employ it, in full doses, in a case of auditory-nerve vertigo, with some beneficial result. Dr. Gowers has tried it; but he has not found that any marked effect was produced on the vertigo. The influence of salicylate of soda upon the equilibrium suggested its use in this disease. It does not remove the giddiness; but in some cases it lessens its intensity, in doses of from five to ten grains three times a day. The most unremitting care in diet and regimen is necessary. Antacids have been found useful in subduing stomachal disturbance, and so arresting an actual attack, and carbonate of bismuth has been of use. The bromides of potassium and of ammonium have been the most beneficial of all medicines in subduing the paroxysms; and the good effects of bromide of potassium are increased by belladonna, and also by its combination with bark. Other sedatives alone, such as opium, Indian hemp, gelseminum, and hyoscyamus, are, in the experience of Dr. Gowers, without effect. The affection is a very obstinate one; but when the several factors in the individual cases are sought out and corrected, a considerable amount of relief may be afforded (Dr. W. R. Gowers).

Whooping-Cough—*See Hooping Cough.*

Writer's Cramp—(*See Scrivener's Palsey.*)

Yellow Fever—*Definition.*—A specific fever of a malignant and continuous type; occurring, as a rule, only once during life, and propagated by contagion. It is attended by yellowness of the conjunctivæ and skin, delirium, suppression of urine, interstitial hæmorrhages and hæmorrhages from the stomach, mouth, nares, and rectum (black vomit, black stools), a slow and, at times, an intermittent pulse. It is limited to very definite geographical limits, never having been known to propagate beyond 48° north latitude, nor without a temperature of 72° Fahr. at least. It has been imported into Lisbon, into S. Nazaire (in the department of the Lower Loire), into Plymouth and Southampton, where the imported cases have run their course and proved fatal, but the disease did not extend to others. It has also been imported and become epidemic as far south as Monte Video. It has occurred as high as 4,000 feet above the sea-level (Newcastle, in Jamaica). But, as a rule, it is endemic in low districts on the sea coast, and rarely occurs over an elevation of 2,500 feet above the level of the sea.

Treatment.—An early attention to first symptoms among the susceptible is of the greatest value in saving human life. The diagnosis of cases in which the attack has been said to have been "aborted" by remedies may be questioned, and such a belief is opposed to the doctrines of sound pathology. Moreover, the "heroic" doses of calomel which were given in such cases, combined with quinine, cannot be too strongly discountenanced, for "they were first recommended on the strength of a crazy hypothesis" alone. The practice is said to have frequently proved successful in Jamaica; but according to Dr. Davy, it was not attended with beneficial results at Barbadoes, and the American physicians at New Orleans have not found it to answer their expectations in stopping the fever. The large and frequently repeated doses of quinine were often also highly injurious (Lawson). This discrepancy may, in some measure, be explained by what has been stated at the outset in explaining the pathology of this peculiar fever. It is in cases where the fever is of the periodic, paroxysmal, or paludal form, and not the continuous or true yellow fever, that quinine may be of use, if the system can be brought under its influence. The ill effects of quinine in specific yellow fever consist in its checking secretion and deranging the circulation within

the head. It is an object to keep the bowels freely open, and to get the skin to act freely. The main object of the physician should be to moderate excessive action in any organ, and to endeavor to bring about as complete a crisis as possible about the fifth day, which seems to be the natural period of resolution of the disease. For this purpose nothing is of more importance than to re-establish the secreting function of the colon, and to obtain fœculent evacuations—not mere bilious discharges, but proper dark-brown fœculent stools (Lawson). Gentle excitement of an extensive portion of the lining membrane of the colon, with frequent copious enemata of a pint and a half of warm water, in which a tablespoonful of common salt has been dissolved, and to which has been added a tablespoonful of olive-oil, or more stimulating enemata, such as of turpentine, deserve a full and careful trial. All the depurative functions must be kept in activity. Turpentine is recommended by Dr. Copland, by Dr. Archibald Smith, and Mr. Laird of H.M.S. "Medea"—one drachm doses by the mouth, or half-ounce doses as a lavement, several times daily, using it also as an epithem on the abdomen. "When the mucous surfaces," writes Dr. Blair, "as indicated by the tongue, were denuded of epithelium, the use of gum water was decidedly beneficial. It lubricated, defended, and soothed the raw surfaces. The strength was generally three drachms of the purest powdered gum arabic, dissolved in six ounces of cold water, and a tablespoonful of this given every one or two hours. The patient at last gets tired of it; but for thirty-six or forty-eight hours of the most critical period of the disease it is used without dissatisfaction, and then can be substituted by, or alternated with, smoothly and thin made arrow-root. When the heat of surface was ardent a wet sheet or blanket was used for the reduction of temperature by evaporation, with frequently very good effect (and if ice could be obtained, its internal use is well worthy of a trial). But in the later stages of the disease, when the skin was cool or cold, the patient seemed to have an instinctive craving for its reapplication, and frequently asked to be put into it. There would appear to be two causes for this feeling. We find it to exist in cases in which black vomit has been copious, and the associating thirst distressing; also in cases where there has been no black vomit of any consequence, and the breath is highly ammoniacal. In the former class of cases the stomach ceases to be an absorbing viscus in anything like the proportion of its secretions and transu-

dations. The skin is therefore employed in reducing the crisis of the blood by the absorption of water, as shipwrecked mariners are said to quench their thirst. But not only does the skin afford an inlet for the imbibition of diluting fluids, but the softening of the cuticle would seem to afford an additional outlet for the noxious elements of the circulation; and it is probably in this direction we must in future look for auxiliary means of relieving the blood of its poisonous, metamorphosed, and effete constituents, the onus of which is now thrown on such vital organs as the stomach and lungs. At one time the heat of the surface was so ardent and persistent that the wet sheet failed to reduce it effectually. The most distressing symptom in yellow fever, both to the patient and the medical attendant, is irritability of the stomach; it is so constantly present, and so often uncontrollable, that the knowledge of every available means of checking it is of the utmost importance. The food during the course of yellow fever should be of the blandest description—chicken tea, arrow-root, sago, and barley-water constituting the chief articles; and these should be taken in minute quantities at a time when the stomach is at all irritable. This rule applies to drinks of all kinds. The patient is greedy for a large draught of fluids; but by sucking them through a glass tube, or a straw, or a hollow reed of small bore, or by the tea or tablespoonful, they are much more likely to be retained. A cold infusion of oatmeal was found an agreeable drink for Scotch seamen, of which they did not seem to tire. A dislike of sweets was observed among the patients; and when lemonade was asked for, the usual quantity of sugar was objected to, probably from its rendering the liquid too dense for ready absorption by the stomach, and therefore less quenching. Tea was found so uniformly to disagree with the patients, and cause vomiting, particularly in the advanced stages, that at length it had to be expunged from the yellow fever dietary. Dilute alcoholic drinks were given freely, and with good effect. When brandy could be obtained pure (tolerably free from acidity and fusel oil), and was well diluted with water, that spirit answered every indication. Sometimes the effervescing wines were relished and retained, but they are very liable to the objections of containing foreign matters and the products of mismanaged fermentation (Blair). For or five minims of chloroform prepares the stomach for the reception and retention of food, by lessening its irritability; and the dose should be repeated

a short time before food is again taken, as the effect of the chloroform is transitory (J. D. Macdonald). On the same principle the administration of chlorodyne may be advocated, the composition of which is given by Mr. Squire in his "Companion to the Pharmacopœia." Lime-water has been also found to have a most beneficial effect in allaying vomiting, and thus enabling the patient to partake of food; and the essence of beef is well adapted for such cases, or beef-tea and arrow-root in equal quantities mixed.

During the course of the disease, auxiliary treatment may be required to meet contingent symptoms. This is embraced chiefly in the use of sinapisms and stimulating liniments. Tenderness over the liver may be benefited by them. Dr. Blair writes that when the primary reaction was violent, and the face turgid, and the head symptoms severe, arteriotomy was performed with benefit. In a few such cases, and when the patient was young, strong, and full-blooded, and where the dynamic congestions were so violent that the vessels yielded to the turgescence and impulse, and blood-corpuscles without tube-casts, or even but a haze of albumen, was present in the urine, a vein in the arm was opened, and free bleeding relieved the tension of the vascular system. In such cases convalescence was slow and unsatisfactory, but the immediate results were beneficial. The severe pain in the loins, which is a constant symptom in yellow fever, is generally associated with renal congestion; and sinapisms or stimulating liniments afford great relief to the lumbar pain (Macdonald). With regard to the administration of opium in any form the rule is, not to give it when there is suppression, or tendency to suppression, of urine. Restlessness and sleeplessness are best met by chlorodyne, remembering that the effect of yellow fever on the system is to make it sensitive to narcotics. The congestion of the kidneys about the fourth or fifth day requires watching, so as to diminish the chances of suppression, by reducing congestion and preventing the closure of uriniferous tubes by accumulated epithelium. For this purpose Dr. Lawson recommends cupping, either dry or with the abstraction of blood, and the use of frictions, with stimulating liniments over the loins. These, with warm baths or hot-air baths, deserve a full trial; and small doses of acetate of ammonia, with potash or soda, or their salts in common use, with diaphoretics (so as to act gently on both kidneys and skin), may prove beneficial.

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